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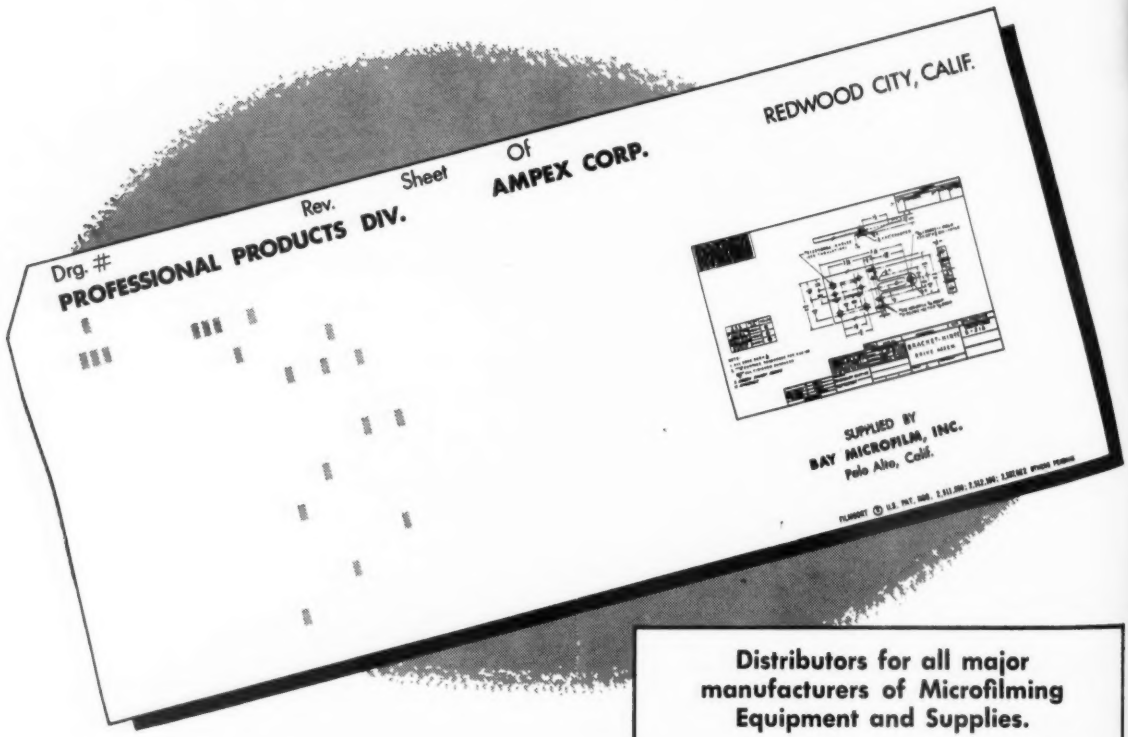

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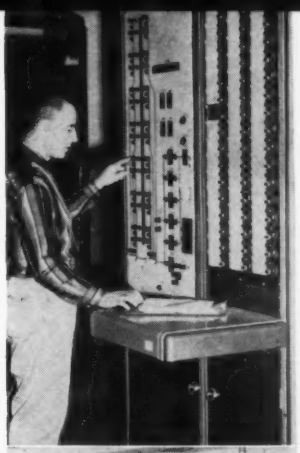

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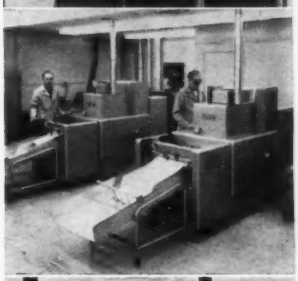

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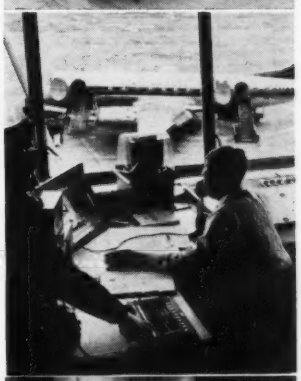


26

33

34

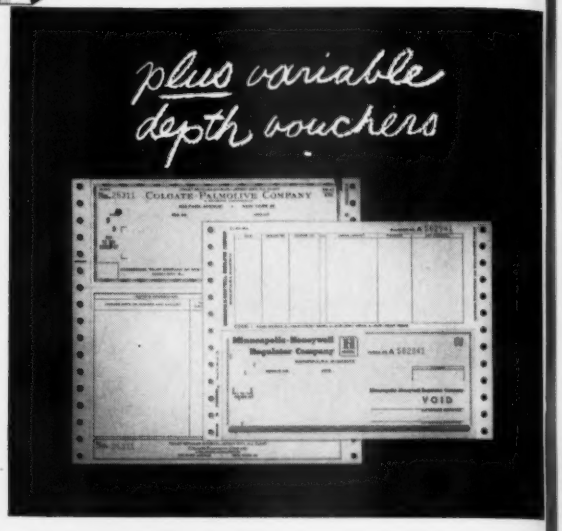
Contents

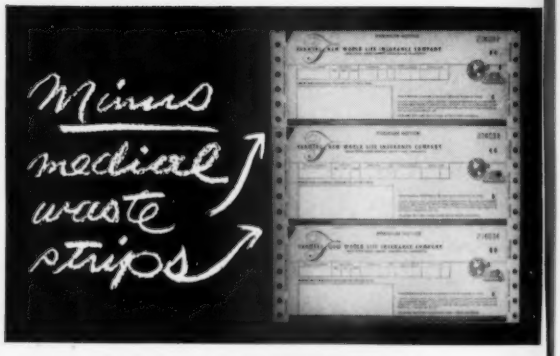
The Departments

REPRODUCTION WITHOUT PERMISSION IS STRICTLY PROHIBITED

On the Cover: *Carl Nelson, president-elect of the National Microfilm Association and our Systems Man of the Month. For further details see page 48.*

EQUATION in EFFICIENCY!





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EDITORIAL

Be a "Joiner"

We are now in the midst of the spring season flurry of conventions, seminars and special meetings. The scope and size of these organizational activities are a real index of the growth and vitality of the systems management sciences.

We heartily recommend and endorse the activities of the leading associations in the systems field. And, while we would not urge readers to become "joiners" just for the sake of professional affiliation, we do emphatically recommend membership in as many groups as time will allow. Just as systems applications can be approached from several aspects, so, too, membership in several groups may serve to broaden the systems man's concepts and horizons. The horizons are indeed exciting and filled with promise for the skilled systems professional. Growth in the past decade has been breathtaking. While our "science" is built on the cornerstone of automation, nowhere is the need for skilled brains more demanding. We are still in the infancy of our growth, but all around us are the signs and symbols of the growing status and importance of the systems expert.

The future will be rewarding for those who prepare and keep pace with swift-moving developments. One of the best ways we know is through affiliation and *participation* in the work of the fine industry associations. It is not our purpose here to enumerate the many fine groups, but to single out just two we call your attention to the American Management Association which held a Data Processing Conference last month (see page 43) and the National Microfilm Association (see page 22). Participation in sessions such as these can only enhance the systems man's professional growth.

Industry News

● Those helping organize the upcoming annual conference of the Association for Computing Machinery (see calendar) include the following men: Benjamn F. Handy, Jr., general chairman, Litton Systems, 5500 Canoga Ave., Woodland Hills, Calif.; E. Floyd Sherman, exhibits chairman, Control Data Corp., 18663 Rosita, Tarzana, Calif.

● A large collection of Hebrew manuscripts on microfilm, representing about 30 per cent of all known important works, is now available to scholars at the Jewish Theological Seminary in New York City. The collection, with more than 750 microfilm reels, each containing several manuscripts, has been in the making since 1953. Dr. Simon Greenberg, vice chancellor of the seminary, estimated that by 1966 the collection would encompass all known manuscripts in the field.

● Trophies to winning schools and companies for 16mm films describing "before and after" phases of

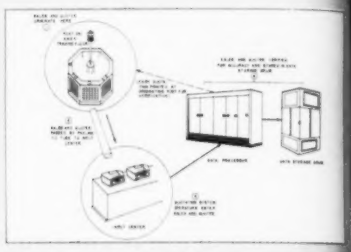
SPACE-AGE MIGHTY MITE: Tiny device examined by Lockheed Electronics scientist is brain cell which provides the memory storage for computers.

methods improvements and industrial engineering training projects will be awarded by the Industrial Management Society at its Tenth Annual Methods Improvement Contest. The contest is being held in conjunction with its Engineering and Management Clinic, Nov. 1-3. For details write: IMS, 330 S. Wells St., Chicago 6, Ill.

● A silver plaque from the American Management Association was given SYSTEMS' columnist Herman Limberg recently. This plaque, awarded only 22 times to date and never before to a representative of government, was based upon "his having conducted, in the capacity of chairman or as co-chairman, a minimum of ten AMA Workshop seminars, representing an extraordinary contribution to the distribution and enhancement of management principles and practices." Dr. Limberg also chairmaned the February meeting of the Federal Procurement Officers Association in New York City.

● The American Stock Exchange took a step forward in the field of investor information and education with the purchase of a revolutionary communications facility and data processor which, in two years, at a cost of three million dollars, will provide investors with the world's first complete, electronically-automated quotation network.

The new quotation range and volume procedure only uses a part of the data processor which, with the addition of sub-systems, will be able to (1) be interrogated from any-



THIS 3-MILLION DOLLAR automation set-up, to be installed within two years, promises to revolutionize the American Stock Exchange. See story for details.

where in the U.S. and Canada, (2) operate the ticker system, (3) permit same-day comparisons of trades and to do most of the other exchange clearing functions, and (4) relieve member firms of clerical procedures.

● An idea that helped speed a large moving project resulted in John H. Steinle, Jr., director of machine accounting for the Texas Employment Commission, winning a prize in a contest sponsored by Allen Hollander Co., Inc., maker of

continued on page 48

Calendar of Conferences

UNIVAC Users Association. Spring Conference. Statler Hilton, Los Angeles, April 13-14.

Systems and Procedures Association. Tenth Annual Spring Conference on Systems and Procedures. Hotel Mark Hopkins, San Francisco, April 21.

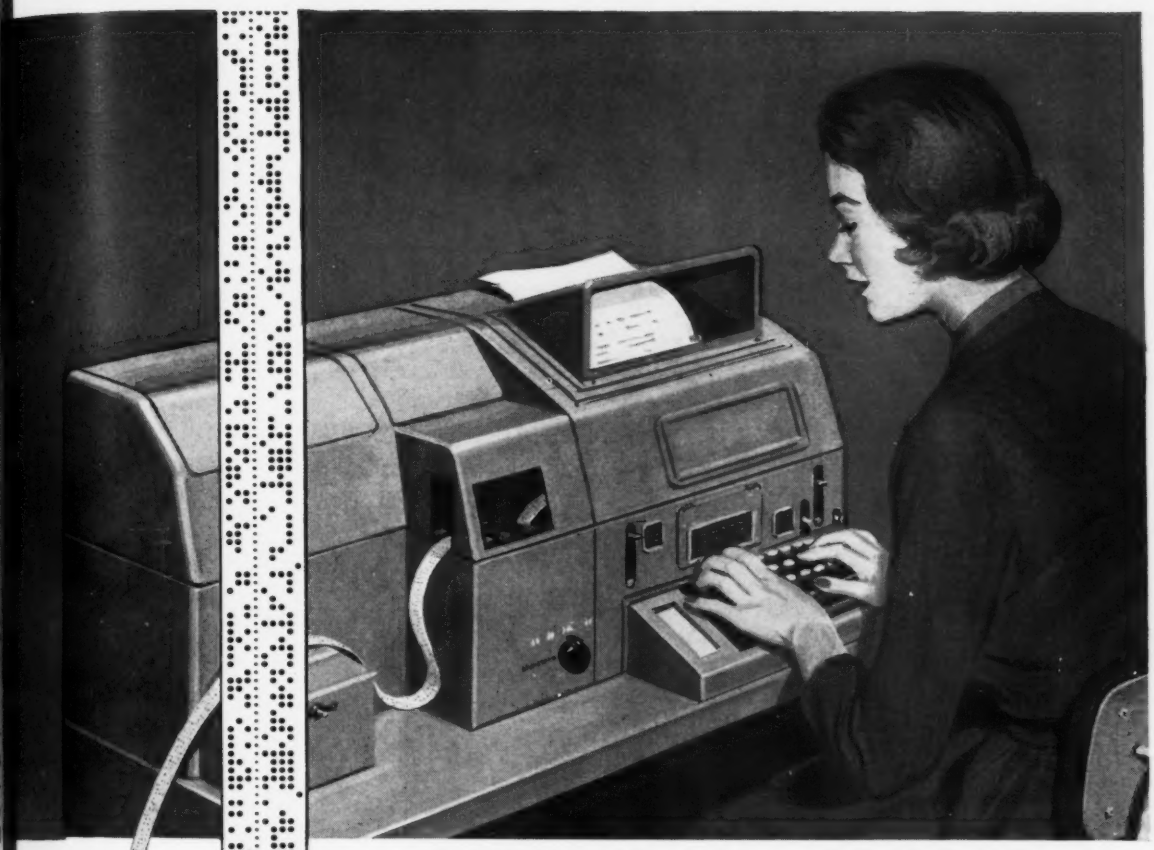
Office Equipment Manufacturers. Third Business Equipment Exposition, New York Coliseum, April 17-21.

Association of Records Executives and Administrators. Fourth Annual Records Management Conference. Hotel Roosevelt, New York, May 1-2.

National Office Management Association. Forty-second International Conference and Exposition. Kiel Auditorium, St. Louis, Mo. May 7-11.

Western Joint Computer Conference. Ninth Annual Meeting. Ambassador Hotel, Los Angeles. May 9-11.

National Machine Accountants Association. Tenth Anniversary Conference. Royal York Hotel, Toronto. June 28-30.



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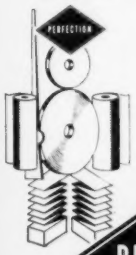

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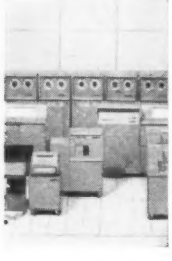
Data System 101

Recordak Corp. will soon be marketing a high-speed computer print-out system which will convert information from magnetic tape into plain language on microfilm. Called DACOM, the system is said to provide print-out speeds to match computer output and will reproduce on 16mm microfilm a complete page of data containing as many as 8,064 characters in approximately one-half second.

Panel Switches 102

Tech Panel Co. Inc. has announced availability of two types of Alteration Switches for rapid set-up changes. One is intended for mounting directly on the control panel, and the other for use on panel covers. Both utilize self-contacting wires of any length that are plugged into the switch bodies, making them suitable for any type and size of panel. Price: $3.50 ea.

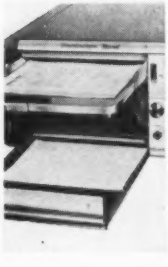


Solid State Processor 103

Burroughs Corp. has developed a solid state electronic data processing system that is said to overcome the shortcomings of wasted manpower and unused speed. A medium-priced system, the B5000 automatically schedules and keeps track of its own work load. Expansion of the system does not require expensive reprogramming and any two or more problems may be solved simultaneously. The system may be rented or purchased.

Mobile File 104

Vertically filed machine accounting cards may be transportated from station to station with the Truck System recently announced by *Tab Products Co.* The mobile system comprises a 4-shelf truck plus a tilted, double-sized Tabtray rack, with optional Tabtray truck and tilted base compartment accommodating seven trays vertically on each side.

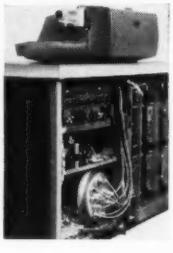


Portable Microfilm Camera 105

A rotary camera for 35mm microfilming, claimed to be the first portable unit of its type, has been introduced by *Remington Rand.* The Film-A-Record Pacesetter features daylight loading, auto-feed, visible film supply indicator and warning signals. Records up to 12" wide are filmed at rates to 150 paper feet per minute, thus speeding up the micro-recording operation.

Versatile Splicer 106

An advancement in splicing techniques permitting triacetate to polyester base splices has been announced by *Prestoseal Mfg. Co.* Its Hercules Model buttweld splicer uses a special thermal setting adhesive coated-on-Mylar ribbon which is welded to the base by heat and pressure. Single- or double-sided splices .011" are made. The unit is especially useful in fastening Mylar leader to Cronar or acetate base films.

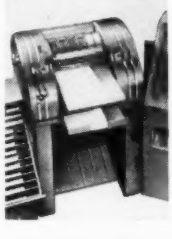


Electronic Computer Typewriter 107

Smith-Corona-Marchant has announced a solid state computer with typewriter input-output which speeds and simplifies the preparation of business forms requiring calculation. Called the Tapetronic 6615, the unit can perform the most complex computations and transfer them in as little as one second. A plastic 16"x5½" program card is used for automatic programming control.

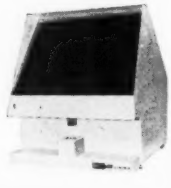
Filmsort Duplicator 108

Large volume production of duplicate Filmsort aperture cards is now possible with the Uniprinter 041 which makes Duplicard copy cards at the rate of 2,000 per hour. *Minnesota Mining and Manufacturing's* new machine is operated by pushbutton control and returns both original and dupe in proper sequence. Exposure is by a mercury vapor unit. Price: $25,000 installed.



Line Selector 109

An Ormir Electronic Line Selector which will select electronically from any location on a master number of lines or group of lines without the aid of masks, strip masters or shingled forms has been announced by *Copy-Craft Inc.* In addition to individual lines, up to six headings or line groups can be programmed for automatic selection.

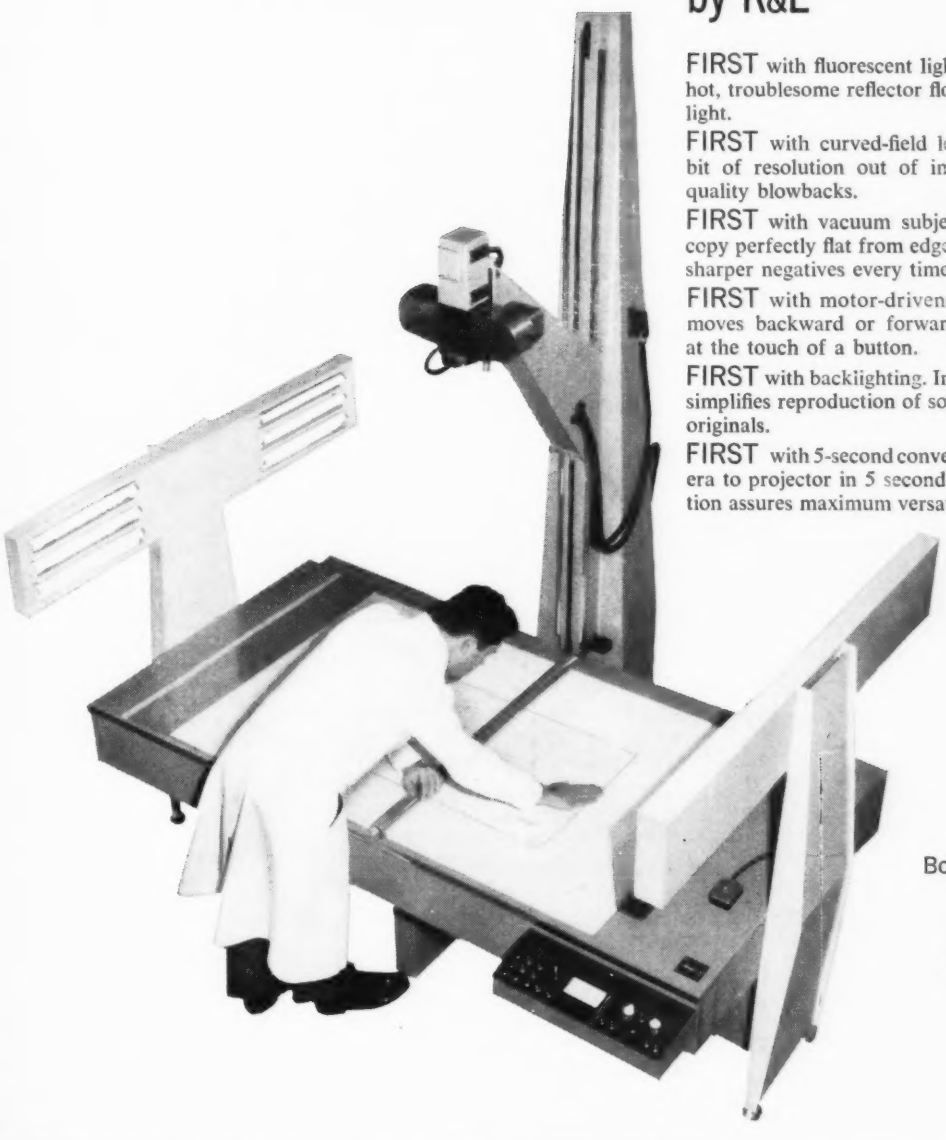


Viewer/Verifier 110

A hand-size mounting machine has been designed so that it can be easily placed on the *Microseal* Verifier/Viewer V-1. The operator can quickly verify the microfilm with the proper tabulating card as the microfilm is inserted into the card. The combination of these two devices simplifies mounting microfilm into tabulating cards.

continued on page 36

the new **MICRO-MASTER®** 35mm Camera-Projector by K&E



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Information Management

by HERMAN LIMBERG
Director of Management Reporting
Office of the City Administrator, New York, N.Y.

Building a Sound Foundation

Sound foundations are indispensable to firm and lasting structures, but such foundations, in themselves, are not enough. They do not automatically take root, sprout and attain maturity. Man-made structures must have heart, body and motivating force for their design, creation, utilization, maintenance and preservation. This is as true of management information systems as it is of any physical facility or organizational effort.

To build and maintain an effective management information system on the foundation described in the preceding issue, it is essential to determine *who* will provide the heart, body and motivating force. With the growth and intensification of interest in this subject matter, the questions most frequently asked are: WHO should determine management's objectives? WHO should establish what management needs to know? WHO should design and install the system? WHO should administer and maintain the system? WHO should prepare the reports? WHO should read and interpret the reports? WHO should take action on the reports? Guidelines for answering these and related questions are currently being developed and expressed by practitioners and researchers in many professional journals and at seminars, forums and conferences of management societies and associations.

It is generally agreed that "top management" should formulate, define and express corporate objectives and determine information needs. "Top management" means the chairman of the board, the president, functional vice presidents and department heads. Also it is generally accepted that the design and structure of a management information system will invariably be the lengthened shadow and reflection of the man at the top.

Recent surveys have revealed, however, that relatively few executives and managers have been defining objectives and determining information needs. There may be a variety of reasons, but the prevailing view was projected in the September 1959 issue of Dun's Review & Modern Industry:

> "It takes quite a long time to work out the proper design of an efficient information flow system. The study must include a thorough analysis of present and future corporate objectives and operational plans. It must determine just what information for decisions will be needed up and down the line of management. Only then can management logically make the subordinate studies of proposed corporate organizational designs, of data processing equipment available, and of methods for applying such equipment to the information system.
>
> "The amount of time and high-price skill that is necessary for these studies still tends to keep most companies from taking the bull by the horns. . . The development of efficient information flow systems will have been some expensive years in the making."

The September 1960 issue of this publication reported that 68 per cent of the manufacturing companies surveyed by Dun's Review "have been making special reappraisals to determine the specific operating information top management needs. This examination is going on in companies of all sizes."

Obviously, then, top and line managements require staff assistance and counsel to conduct the preliminary studies, develop and formulate objectives, establish information needs, and design and install the systems and procedures

to meet these needs. The most likely source for such staff aid is the systems and procedures activity. At the American Management Association Forum in May 1960, Ronald Daniel of McKinsey & Co. discussed the opportunities for systems people to "help management determine the kinds of goals a business should have; identify the information required for management to set intelligent goals; and develop systematic ways of collecting, processing, and presenting the information." "What may evolve," said Daniel, "is the *super systems man*, an information specialist, who not only can help management with the procedural aspects of business planning, but can also participate in the basic analyses of planning data that lay the groundwork for goal setting and decision-making." Daniel's image of a *super systems man* should be brought into sharper focus as a management *generalist* rather than an information *specialist*. Walter B. Schaffir of Sperry Gyroscope Division of Sperry Rand expressed the same concept, some time ago, when he observed that "most analysts are quite skilled in digging up facts, but they know much less about what to do with them. The (management information) system cannot be merely the result of adding up bits of information; it must be sensitive to the central needs of the business and its personalities. The designer must be an artist as well as a technician; he must shape his work with understanding, imagination, courage, intuition, and mature judgment."

Systems and Procedures

Administration and maintenance of the management information system, which entail the facilitation of timely and effective flow and utilization of information at all organizational levels (and by all components) may be assigned to the systems and procedures activity, to a control unit or to a new star in the administrative constellation: the Director of Information Services who reports to the Vice President for Administration. On this subject the most advanced thinking which had appeared in print as this column was being prepared was the article by Marion Harper, Jr., chairman of the Board of McCann-Erickson, Inc., entitled "A New Profession to Aid Management," published in the January 1961 issue of Journal of Marketing. Harper proposes the development of a new profession, with qualified professionals to be designated as "Director of Intelligence Services." Harper's first premise is that "to manage a business is to manage its future, and to manage the future is to manage information." Management would look to the Director of Intelligence Services as "someone who would develop information for different possible recommendations and who would outline the probable consequences of moving in any direction."

Irrespective of the plan of administration for the management information system, required reports

continued on page 15

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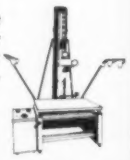

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Circle No. 504 on Post Card

Microfilm Topics

by HUBBARD W. BALLOU
Columbia University Libraries

A Reproduction Medium

In an earlier column (October 1960) I noted the parallel growth of ribbon and sheet microfilm, with emphasis on the use of the roll version in this country. In a sense, the microfilm industry in the U. S. began as a parasite on the body of a large and well-established cinematographic industry. Microfilm cameras used film in sizes developed for moving pictures. This film was processed on machines designed for movie film and read on reading devices based on filmstrip projectors. The philosophy of a master negative film kept in storage, with positive print film for use, carried over into microfilm practice. The film is important and the user comes into intimate contact with it.

A New Philosophy

During the Second World War we find the beginning of a new philosophy, which owed its expression to the V-mail process. Here the film itself was no more than a means of transferring the information from the sender to the receiver in a package that could be easily carried by airplane. The film was merely an ephemeral medium for storing this information during its travels. It was disposed of as soon as the message was received. In many cases the user was not aware of the existence of the film.

About the time of the Korean war a new impetus was given to this application of microfilm by the introduction of Xerox and its Navy-sponsored Copyflo development. Information is stored on microfilm, either in long ribbons holding many associated documents or in unitized Filmsort cards where each card stores a disparate document. Again, the ultimate user may be aware that microfilm is used in the process, but it is the hard copy print that he uses and wants.

In some cases the film used as a storage medium is processed for archival permanence, and occasionally it is not even used in the machine itself. Duplicate film is prepared and this film is exposed to the rigors of the Copyflo enlarger. The many projects stemming from Department of Defense contracts, where engineering documents are stored and disseminated on microfilm but used as electrostatic prints, are daily expressions of this application. In other operations the film may be archivally processed, or it may be given a stabilized and curtailed processing. In any case, the film is not cherished after the hard copy is produced. In the Library of Congress (which processes for archival standards) this has resulted in a halving of their production of projection photocopiers and a doubling of microfilm exposures during the two years from 1958 to 1960.

Intricacy Grows

As the user moves farther away from the film, this film gets involved in larger and more intricate pieces of equipment. It is a far cry from the engineer sitting at his drafting board checking a Filmsort card of a design detail with an inexpensive hand viewer, to the management specialist who can run through a "library" of three million documents in about ten hours and have hard copies prepared of those that are on the specific subject that he desires. This is possible with the recently introduced FileSearch retrieval unit offered by FMA for $114,500 which uses a machine that takes up 68 cubic feet of office space. Add a slide-rule to the engineer and we have a human counterpart to the computers with microfilm read-out

that are beginning to appear. Eastman Kodak's DACOM is a recent offering in this field, joining an earlier venture by Stromberg-Carlson.

These sophisticated information storage and retrieval systems that can handle great masses of meticulously-prepared material and digest it in a short time at a low unit cost are geared to microfilm that is stored in two forms. One group uses film in the ribbon form. The Benson-Lehner FLIP, the Bush-Shaw Rapid Selector and the FMA FileSearch are examples of this type. The first of these stores the documents on 16mm film and presents an image on a screen. The other two use 35mm film and prepare copies of the selected items. The FileSearch has a screen for critical appraisal before requesting a hard copy of the document.

Use of Micro-Chips

The other group uses microfilm cut into small chips (16 x 32mm in two cases). The Samain Filmorex, the Kodak Minicard and the Magnavox Media are examples of such systems. The French Filmorex uses sheets 45 x 72mm (just under 2 x 3 inches) and feeds them into the selected unit in much the same manner as IBM cards. The other two use postage stamp sized sheets (⅝ x 1¼ inches) and stores the units on "pretzel sticks" (Minicard) or in capsules (Media). Thus we see that microfilm has run the full circle — ribbon and sheet for both individual use and systems applications. □

Industry Growth Chronicled

Vernon D. Tate, executive secretary of the National Microfilm Association, announces that NMA will print the Proceedings of the First Annual Meeting, "in order to establish a beginning for the series of annual volumes that in subsequent years have chronicled the growth and expansion of the industry."

The contrasts between the First Annual Meeting in Washington in 1952, a small affair, and the current show in Chicago reflect the growth of microfilm in the past decade. This growth is now permanently chronicled through the complete set of Proceedings.

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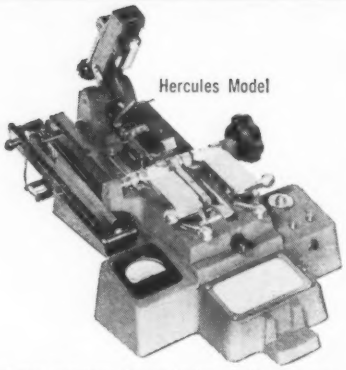
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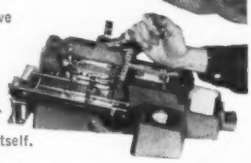

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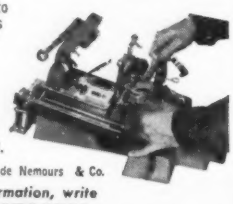

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EDP in Action

by G. H. COWPERTHWAITE
Peat, Marwick, Mitchell & Co.

EDP Installation Planning

Five years ago, many professional firms were dismayed at the lack of planning in companies contemplating installation of electronic computers. At that time it was emphasized that planning, particularly before making a decision, could well mean the difference between a successful installation and one that would be fraught with problems. The studies then made by companies were frequently called feasibility studies. This term, which has gained widespread acceptance, is probably unfortunate, since it focuses attention on the machine rather than on the preplanning necessary to a sound decision.

The responsibility for directing a study and recommending the appropriate decision to management has usually fallen on the controller or the top administration officer of a company. Many study groups have been assisted by outside consultants. It has been found that the best progress is made by small study groups which rely on highly qualified personnel within the organization to provide the major effort.

The greatest danger has been over-simplification of the problem. To be effective, the study must be mainly an analytical examination of the company's operations, rather than an investigation of whether or not it can use a particular machine. If sufficiently thorough and analytical, such studies often have unexpected results. Several companies in the United States and some here in Canada decided not to use computers when they found that many of the desired benefits could be obtained without introducing this type of equipment.

The time required for such a study depends upon the complexity of the problem, but it usually takes some three to nine months to assemble the information necessary for making a decision whether or not to introduce a computer.

There are several important questions which must be answered when making such a survey. These include the following:

1. Is the system acceptable to supervisory and management groups? Do they know enough about it to approve it in principle, so that they will not later reject it in practice?

The full support of top management, based on adequate indoctrination as to the use of a computer, is fundamental to its satisfactory installation and operation.

2. Is the delivery date realistic in terms of systems development? There have been far too many cases in which the manufacturer has insisted on fitting the delivery date to his schedule rather than suiting a company's own system developments.

3. Is the company capable (or willing) to assemble a staff to carry out the program?

To rank as thorough, a study must cover the thirteen points set out below:

1. A job analysis, to estimate the cost involved in present clerical work preparation, and to ensure that every aspect of the operation is examined.

2. An analysis of existing usage of punched card equipment, including such items as card quantities, machine time, etc.

3. The preparation of functional flow charts of the operation.

4. The preparation of departmental work flow charts, breaking down present operations in detail.

5. Consideration of what non-

electronic improvements are available.

6. Determination of operating requirements and opportunities.

7. The preparation of a systems design.

8. The establishment of charting procedures for systems design.

9. An estimate of the number of program steps that will be required.

10. An estimate of machine capacity requirements. Numerous problems with manufacturers have been experienced in this area. Sometimes machines do not operate at the speeds indicated in printed matter, and the manufacturer's specifications, or program steps are underemphasized.

11. An estimate of savings.

12. An estimate of preparatory and conversion costs.

13. The selection of equipment.

These, and sometimes more, considerations are vital. □

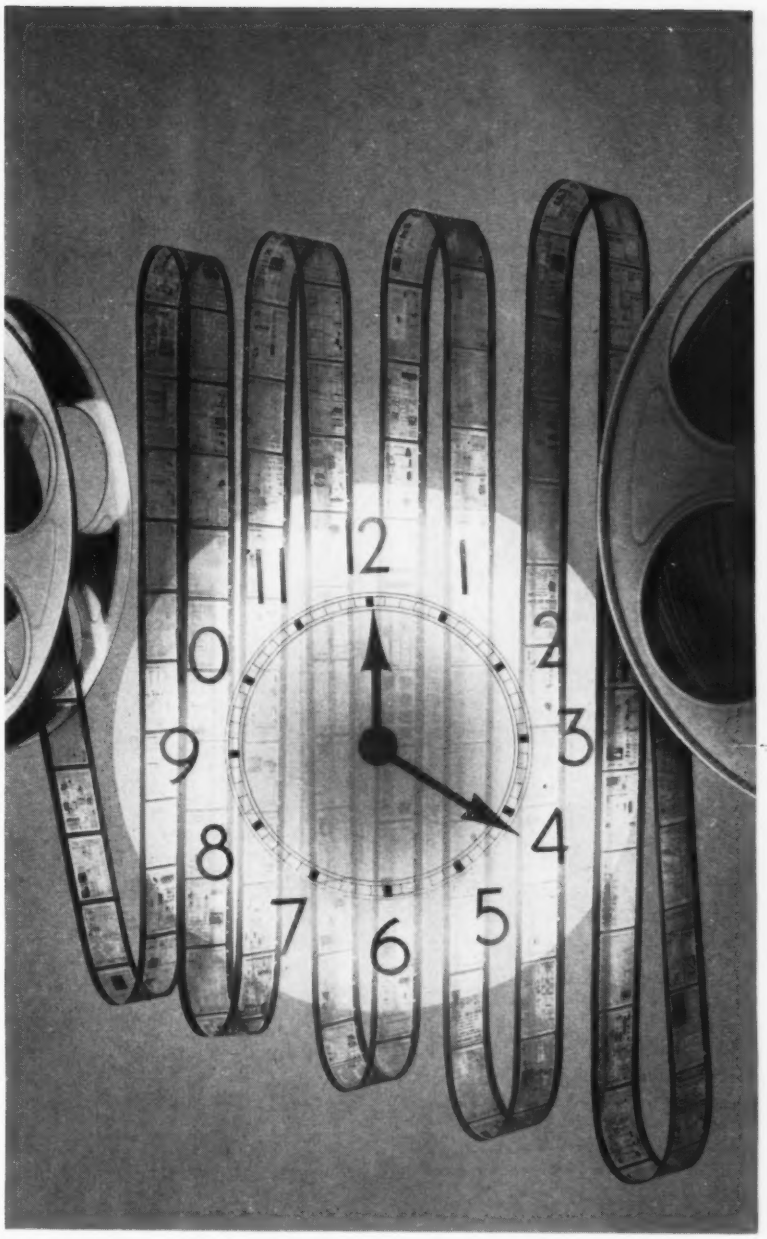
Reprinted from Management Controls, *November 1960, monthly bulletin of Peat, Marwick, Mitchell & Co., N.Y. An expanded version of this article appeared in* The Canadian Chartered Accountant, *December 1960.*

INFORMATION MANAGEMENT

continued from page 11

should be prepared by the line managers responsible for the contents of such reports, but in the form prescribed by the administrator or controller of the system. Reports should be read and interpreted by both their originators and recipients. Action on the reports should be taken at the lowest echelon at which responsible and effective action can and may be taken.

The structural principles of a management information system expounded here closely parallel the basics of organization. Essentially the adequacy and effectiveness of the system will depend upon the sophistication and support of top management and the cooperation and working relationships of the line and staff elements of the enterprise. □



JUST 21 MINUTES to process your own microfilm automatically. Microfilmed documents are ready for viewing just 21 minutes after the exposed film is loaded in your Houston Fearless Labmaster for processing. (200 ft of 16mm @ 40 f.p.m.) This fully-automatic machine will process thousands of documents per hour, each one of top archival quality. Besides, it offers greater convenience, higher security for confidential papers and substantial savings in processing costs. A compact, completely self-contained unit, the Labmaster may be installed in a lighted room and easily operated by almost anyone. Reasonably priced. 16mm and 16/35mm models. Send today for brochure and prices. Westwood Division HF Houston Fearless Corp., Los Angeles 64, Calif.

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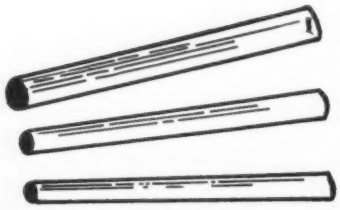
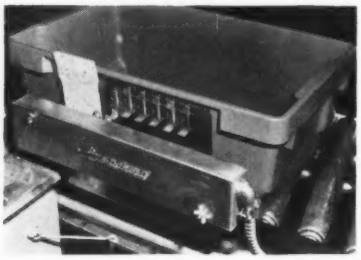
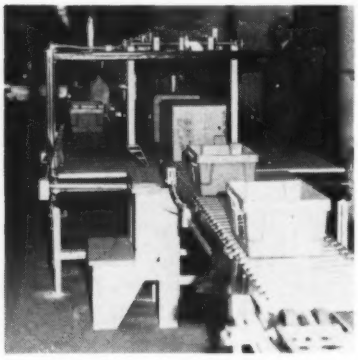


Electronics Speed Up Navy Supply Traffic



A TOTE TRAY is acted upon by the sensing device based on card signal which shunts it to the proper line.



ITEMS ENTER one of three portals for either immediate breakdown or for breakdown in a later designated area.

Automated warehousing has enabled the U.S. Naval Supply Center at Bayonne, N.J. to increase its capability to move supplies by 60 per cent. An electronic cop that automatically governs supply movements is the forerunner of future Navy advances in systematized traffic handling.

One day the Navy will supply its fleet with the ease of "a gum ball falling from a penny machine." Already many ships order supplies by means of electronic punch card machines. But, eventually, the Navy hopes to feed the information directly to EDP machines ashore.

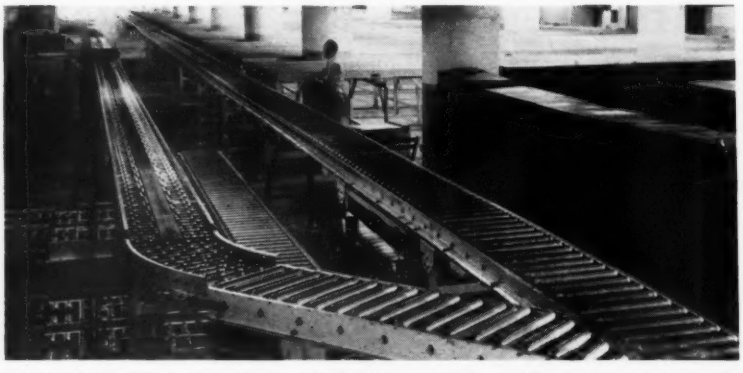
An automated warehousing system on a large-scale multiple product basis has been initiated at the Bayonne, N.J., Naval Supply Center with the installation of a 6,000-foot conveyor system.

Announced as the first in both military and civilian use, the new operation is the forerunner of general conversion to automated warehousing throughout the Naval supply system.

With consideration for tremendous initial costs and the financial risks of a sudden switch to complete automation, the switch was accomplished in two phases. First, 245,000 items stored at Bayonne were repositioned according to the turn-over speed of each item. Then, the conveyor was installed to dove-tail with popularity storage. Eventually, EDP machines will trigger a complete automatic system including mechanical stock pickers.

Increases Economy and Production

Rear Admiral Frederick L. Hetter, SC, USN, commanding officer of the Center, who has supported the development almost since the idea first came up five years ago, says



MARSHALLING YARD. Beyond the first breakdown point in right foreground is the line leading to the accumulators at upper right. Next to the accumulator line is a siding for parcel post. Shown going from left to right in the foreground are conveyors.

PARCEL POST STATIONS. Two gravity feed lines off main parcel post conveyor are shown above before adding packing racks.

that the system's installation can be justified on the basis of economy and increased production efficiency.

"Our convictions about costs," said Admiral Hetter, "were confirmed when it was shown that the greatest expense in transportation here is incurred inside the buildings where supplies are moved by hand trucks, fork lifts and tractors. This pointed to the conveyor as the means of the greatest savings."

Previously, issuing capacity in an eight-hour day was 4,500 items. The new system now has a capacity of 7,200 items, a 60 per cent increase. Although the Center handles 300,000 items, 55,000 were eliminated from inclusion in the system because of being too large or heavy, or too seldom called for by customers. Categories of supplies carried include electronics, general stores, ordnance, fresh and dry provisions, forms and publications, automotive repair parts, and medical and dental supplies.

Multi-Group Development

The system of automation was designed by supervisors at Bayonne with assistance from the U. S. Naval Supply Research and Development Facility. Fabrication and installation of the initial portion of the unit was performed by the Rapids Standard Company, Grand Rapids, Mich.

Installed in two large buildings connected by an enclosed bridge, the 1,200-foot conveyor runs through an aisle in the storage building's bin area, where the items with the fastest turn-over are stored, and hooks up with a maze of conveyors in the packing building. Stock pickers in the forward section put one item or unit into a specially designed tote-box and press down a signal tab. The signal activates a sensing device on the conveyor shunting the tote-box to one of six areas.

The destinations are:

1. **Accumulators** — fifty-one sidings where many items for one customer are consolidated.
2. **Special Programs** — a siding where unusually large orders for new ships or ships being overhauled are consolidated and sent as a unit with an item location index.
3. **Parcel Post** — a type of shipping used often due to the many small items handled.
4. **Manufacturers Pack** — a station where the package used by the manufacturer of an item is re-addressed and sent out.
5. **Direct Pack** — reserved for small customers who order just one, two or three items which do not justify special treatment.
6. **Freight Rate Breakdown** — a switching point at which items from the accumulators are separated according to the freight rate charged for them.

Flexibility is built into the system by means of an electronic console in the packing area. Equipped with lights, electric counters, and an outline of the system, the console informs the operator what is happening throughout the system. By pushing a button, the operator can divert work from a packer who is overloaded and send it to another with less work.

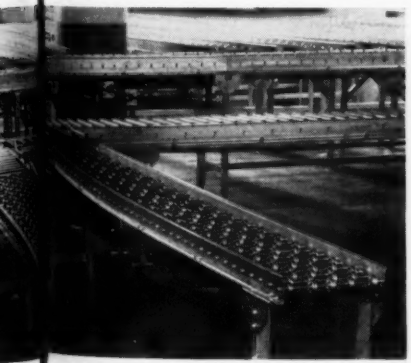
Daily Programming

Another feature is the programming of work. The day's work is planned so that stockpickers and packers can start production when they report in the morning.

Although automation will cut down on the number of employees needed at the Center, Admiral Hetter has assured them that no one will be laid off on its account. Several months before the hardware was installed the Employment Department was ordered to take advantage of retirements and resignations to realign the work force. Also, programs of retraining were established to convert employees to new jobs.

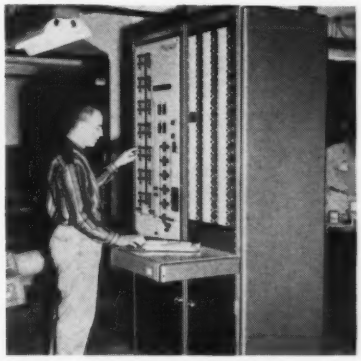
"We have investments in our employees who have been trained and tested at an expense to the Government," Admiral Hetter said. "It would be wasteful to fire them and then go out into the labor market and spend more money to recruit and train new employees. Retraining old employees is cheapest." □

Photographs courtesy of U. S. Naval Supply Research and Development Facility Bureau of Supplies & Accounts N. S. D. Bayonne, N. J.



In the background are accumulators and the belt to carry off parcel post items after they are packed in foreground.

PACKING RACK in position on parcel post line shown above. Moving belt carries package to waiting mail sacks.



CONSOLE OPERATOR controls entire system. Right panel shows accumulator activity; left shows layout of packing activity.

Remote unit reports progress
Located in the Sales Department, this remote inquiry station has a direct line to the RAMAC unit on the floor below. When a customer order number is keyed into this station, an up-to-date status report is *immediately* printed out on the automatic typewriter.

Keeps an eye on production
Final assembly and testing of these Cramer timing controls are typical of the many precision operations carried on in the plant. Each involves a large number of small parts which are produced, stocked and assembled under MOS control.

Gets information fast—Mr. J. T. Kennedy, Treasurer, checks with operator of the IBM RAMAC 305 Data Processing System—the heart of Cramer's Management Operating System. Disk file at rear stores and continually updates all operating records—each immediately available on demand.

Management Operating System at Cramer Controls Corporation

...improves delivery and reduces inventory
...with an increase in sales of 60%

Cramer Controls Corporation, Centerbrook, Connecticut, manufactures precision timers and control instruments. They consider their IBM Management Operating System a *highly profitable investment.*

To this progressive company, with 330 employees and annual sales of around $4 million, IBM data processing is an essential part of management control. It has helped them cut costs...reduce inventories... improve profit margins...speed customer service. And it has done all this while handling a 60 per cent increase in sales and reducing delivery time by five full days.

Built around the IBM RAMAC® 305, the system at Cramer uses modern data processing techniques to *inter-relate* the six major control functions: Sales Forecasting, Materials Planning, Inventory Management, Plant Scheduling, Work Dispatching & Operations Evaluation.

How MOS works to cut costs

Complete data for each major operating function is stored in your data processing system. There, past and present sales trends and forecasts are combined to produce a more complete "finished product" plan which automatically...

- determines material requirements
- checks these requirements against inventories
- allocates stocks to assembly needs
- polices inventories for under- or over-stocked items
- initiates stock-replenishing orders as needed

The sequence continues through scheduling, dispatching and operations evaluation. Continually updated cost and performance figures keep management informed of every phase of production.

Any change entered into the system is automatically reflected in all other control data. The compensation is made according to a prearranged plan—*your* plan—so that all controls are working toward your *current* objectives.

MOS offers comprehensive control

Only with the total approach provided by MOS can you get such coordinated effort, such complete information, such tight operational control. Only with MOS can you study, *in advance* the effect of decisions yet to be made. For more information, call your local IBM office.

IBM® DATA PROCESSING

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Rapid Access is a "Must"

That's what Collins Radio found it needed to maintain a competitive position so it turned its systems men loose in the microfilm arena.

Rapid access to engineering information is essential if a company with volume print requirements is to maintain a competitive position. This is the situation of the Collins Radio Co.

Headquartered in Cedar Rapids, Iowa, the company is engaged in the research, development, manufacture and sale of electronic equipment for the aviation, broadcast and amateur radio fields, as well as equipment for use in military, space and industrial communications. To meet its needs, Collins recently inaugurated a microfilm system enabling its personnel to refer to any of their 230,000 engineering drawings in a fraction of the time previously required.

Time-Consuming Procedures

Before the microfilm equipment was installed, orders for prints came by phone or plant mail. The time-consuming process of mailing or telephoning the order, sorting the requests by drawing number, locating and removing the tracing from the file, making the number of reproductions ordered, returning the tracing to the proper location, and mailing the reproductions to the user was necessary even when a quick look at the tracing would have sufficed. Finally, when the number of drawings increased beyond the capacity of the vault and faster service was required, the old system became obsolete.

Under the new system, one of the four Recordak microfilm cameras makes six 35mm photographs of each drawing as it comes from the drafting table and its drawing number is punched on an IBM master card. Then, six aperture cards are prepared to hold the microfilms, and the drawing number is key-punched automatically on the aperture card by data processing equipment so that the cards can be sorted on electronic accounting machine sorting equipment.

The exposed film is processed in Collins' laboratory while the aperture cards are being prepared, and when both operations are finished (this takes only a few hours) the film is mounted in the cards and distributed to the different file locations. Collins uses approximately 24 rolls (100′ each) of microfilm each month, with an average of 550 exposures per roll.

When it is desired only to view the drawing, the aperture card is selected from the file and inserted in either a microfilm reader/reproducer or a viewer. Thus, in a matter of minutes Collins personnel has access to information that formerly took days to obtain. If viewing the drawing indicates that a print is needed, a light-duty copy can be made right at the microfilm reader/reproducer, or a more permanent and economical copy may be ordered from the central quick-access file, using Xerox techniques.

A print or transparency can be ordered through an automatic telephone-answering service. One of the two Haloid Xerox 24C continuous printers reproduces the microfilm drawings on plain white paper, and the drawings are delivered through company mail.

The microfilm process saves time in many different ways. For example, until the new system was installed, prints could not be made from drawings that were undergoing revision. Prints now are available at any time, so that the information not being revised may be used.

Recently, development activities that previously were under one roof were divided, and some were placed in other buildings. The required duplication of support activities was

COLLINS RAPID ACCESS SYSTEM: First all drawings are microfilmed (top) with a light meter reading on each document to assure proper exposure control. The six exposures required for the system are photographed automatically. Next (bottom) microfilm is processed within minutes right within area where the documents are filmed.

AFTER PROCESSING each roll is checked for proper density and exposure (top). Then an automatic telephone service takes orders from Collins various locations (middle). These are keypunched into EAM cards which are used as order forms. Once cards are located, Xerox equipment (bottom) produces the required number of copies from the microfilm image.

greatly facilitated by the use of the microfilm equipment.

A unique use of the Recordak filming (or camera) equipment is in contract microfilming for the Navy under MIL-D-17419, under which each drawing is microfilmed from original tracings in numerical order. The camera is moved up and down and re-focused so that each exposure fills the aperture film in at least one dimension, in contrast to the normal process where the camera remains stationary and the size of the image on the film depends on the size of the source document. All drawings are photographed on continuous reels of film, and the photographs are not placed on cards.

Numerical Filing System

Tracings are filed by drawing number, under a size classification. With this process, aperture cards can be filed numerically regardless of drawing size.

Collins' Catalog Department now uses aperture cards in preparing parts lists, which previously were prepared from sets of full-size engineering prints that often took a month or more to obtain because the tracing was being used for other purposes. Now, a complete set of microfilmed drawings, in card form, is on file at the Catalog Department, and Catalog personnel have merely to select the desired set of aperture cards from the file and insert them in viewers. This has greatly reduced the volume of material used, and has eliminated delays caused by backorders. Also, the cards are easier to handle than full-size drawings.

Work Flow Varies

Collins now has a normal flow of about 1200 old and 1200 new drawings that are microfilmed each month, each of which requires from five to 20 initial prints in addition to any orders by phone service. The number of drawings called for per day varies between 600 and 750, an increase over the previous volume. They expect eventually to deliver all prints within eight hours after they are ordered, contrasted with four days or more (three days was the best they could hope for) before the microfilm process was installed. □

Collins is all Systems – EDP too!

Collins Radio is an extensive user of communications systems tools. In addition to exploiting microfilm to the fullest, the company has initiated a company-wide electronic data processing service that eventually may become open to outside industry.

Formed as the Communication and Data Processing Division, the EDP services will comprise the communication and data processing facilities of all Collins divisions and subsidiaries, servicing them and, eventually, industry customers on a subscription basis. This service will enable large and small businesses to channel information directly into large computers to process business and scientific data.

The system is a result of Collins' developments in advanced communication, switching and data transmission equipment. Automatic switching and control equipment will provide for intra-company voice, teletype and data communications using wire lines, point-to-point and air-to-ground radio. Collins Kineplex data transmisson equipment will be used for wire line communication.

First Link Completed

The systems's first link, between a subsidiary's plant at Toronto and the Central Data Processing Center at Cedar Rapids, Ia., has been completed and is in operation. Additional links are being made to subscriber stations at Los Angeles, Dallas, Washington, New York and Kansas City.

When equipment development at the Dallas, Burbank and Cedar Rapids laboratories is completed the "on-line, real-time" EDP services will be available to industry customers by various arrangements.

"The design of the system's communication and data processing equipment," says Arthur A. Collins, President of Collins Radio, "anticipates the day when virtually all forms of intelligence will be conveyed automatically from multiple originating points to multiple destinations." □

NMA CONVENTION

Information technology has been defined as "the creation of equipment and procedures by which information can be made available to those who need it, when they need it, where they need it." This definition, coined by Richard S. Leghorn, President of Itek Corp., can also stand as a working definition of a good microfilm recording and retrieval system. So it is more than appropriate that Leghorn will keynote the National Microfilm Association's 10th Annual Convention, to be held April 4-6 at Chicago's Hotel Sherman. His topic is "The Impact of Science and Technology Information Systems."

With Leghorn setting the tone, the general sessions will include papers on microfilm logistics, engineering applications, library and archival usage, retrieval and basic microfilm technology, each session ending with a panel discussion by the speakers and others of questions from the floor.

First Session

The first session's chairman will be Eugene B. Power, President, University Microfilms, Inc., Ann Arbor, Mich. Speakers will be John T. Caton, Illinois State Records Advisor, on "The Place for Microfilm in Records Management"; William P. Burley, Microsurance, Inc., Philadelphia, "How to Conduct a Feasibility Study"; and Fred Luther, President, NMA, "The Economics of Microfilming: A Comparison between Contractual Services and a Do-It-Yourself program."

The morning schedule for April 5th consists of a session on engineering applications and one on library and archives.

The Engineering session chairman, Hugh W. Stass, Gen. Mgr., Micrographic, Inc., Palo Alto, Cal., will lead off, speaking on "Activity on the West Coast." Following him George T. McMahon, Westinghouse Corp., will speak on "Short Cuts to Automation"; Col. Earl T. Wiley, Jr., and William S. Hutchinson, Armed Forces Supply Support Center, Washington, D.C., on "Microfilm's Place in DoD Engineering Data Systems"; Harry D. Patterson, Redstone Arsenal, Ala., on "Micro-

film System for Missiles"; and Lester A. Roudebush, General Motors, on "Industry Looks at the DoD Program." A panel discussion on "DoD EDMS at Work" will end the session.

Archival Program

Verner W. Clapp, Council on Library Resources, Washington, will preside at the alternate session on Library-Archival Application of the Microforms. Speakers will be Herman Henkle, John Crerar Library, Chicago; Ben C. Bowman, The Newberry Library, Chicago; James Dugan, Battelle Memorial Institute, Columbus, Ohio; Peter Scott, M.I.T.; Laurence B. Heilprin, Council on Library Resources; George A. Schwegmann, Library of Congress; Albert James Diaz, Microcard Foundation, Washington; and Richard W. Hale, Commonwealth of Mass.

Spotlight on Retrieval

The April 5th afternoon session will deal with retrieval, with Richard W. Batchelder, ex-President, NMA, as chairman. Speeches will be given by Paul W. Howerton, CIA, Washinton, D.C., on "A Microfilm Unit Record System: A Case Study", discussing the CIA's use of microfilm; George H. Hamp, Dept. of Navy, Washington, on "Unitizing and Roll Retrieval Systems"; and Albert W. Dunning, Plastic Coating Corporation, Holyoke, Mass., on "The Hard Choice of Hard Copy from Micrographic Systems."

Two panel discussions will complete the session. Participants in the first discussion, on "Unitizing and Roll Retrieval", will be Howerton, Hamp, Dr. Marshall R. Hatfield, MMM, St. Paul; Robert Beispell, Microseal Corp., LIC, N.Y.; Gal 2 Systems 3297 10-11 x 13 TR Henry C. Maguire, The American Microfilming Service Co., New Haven, Conn.; Mark O'Connor, N B Microjacket, Long Island, N. Y.; Donald D. Jenkins, Magnavox Co., Ft. Wayne, Ind.; R. S. Ellsworth, FMA, Inc., El Segundo, Cal.; Henry S. Lemeur, AVCO, Cincinnati; Al Thomas, Recordak Corp., New York; and Bernard S. Benson, Benson-Lehner Corp., Santa Monica.

The second panel will discuss "Blow Back Methods." Joining speakers Howerton and Dunning will be Richard E. Mayberry, Haloid Xerox, Inc., Rochester, N. Y.; Quinton R. Sharp, Charles Bruning Co., Inc., Mt. Prospect, Ill.; J. H. Smith, Jr., Vice-President, Documat, Inc., Belmont, Mass.; Murray L. Gristle, president, Griscombe Products Corp., New York; Dr. T. O. Norris, Keuffel and Esser Co., Hoboken, N. J.; D. T. Gerlach and S. V. Boh, A. B. Dick & Co., Chicago; Dr. R. Wolf, MMM, St. Paul; John V. Hogan, Hogan Facsimile, New York; A. L. Baptie, Microcard Corp., West Salem, Wisc.; John E. Gerling, Litton Industries, San Carlos, Cal.; Frank Scherr, AVCO, Cincinnati; Payne Johnson, General Dynamic Electronics, San Diego, Cal.; and Lawrence G. Kupler, Television Utilities Corp., Division of Nord, Long Island, N. Y.

RICHARD S. LEGHORN, President, Itek Corp., NMA keynoter will speak on "The Impact of Science and Technology Information Systems."

NMA PROGRAM

Tuesday, April 4

9-12 a.m. — Registration and exhibits

12 noon — Luncheon, formal opening of convention
Welcome by Frederic Luther, NMA President
Keynote speech: by Richard S. Leghorn, President, Itek

2-5 p.m. — First General Session — "Microfilm Logistics"

6 p.m. — Social Hour and "Get Together"

Wednesday, April 5

9-12 a.m. — Two concurrent sessions:
Engineering Applications
Library and Archives

12 noon — Luncheon, annual business meeting.

2-5 p.m. — Third General Session — Retrieval

7 p.m. — Annual Banquet — Presentation of Awards

Thursday, April 6

9-12 a.m. — Fourth General Session — Basic Microfilm Technology

1:15 p.m. — Luncheon, presentation of new officers.

Final Session

NMA president-elect Carl Nelson of Bell Telephone Labs, will be chairman of the convention's last session dealing with basic microfilm technology. First, three speeches on films will be given. Dr. Robert T. Nieset, Tulane U., will speak on "The Basis of the Kalvar System of Photography"; Dr. W. Allen Burris, Dynacolor Corp., Rochester, N. Y., on "Characteristics of Silver Emulsion Films Designed for Microfilm"; and Harold E. Rubin, Bell Telephone Labs., on "Recent Improvements in Diazo Microfilm." A panel discussion will follow with the speakers as participants. Then, Warren B. Reese, Vice-President, MacBeth Instrument Co., will speak on "Fundamentals of Densitometry." Next, a series of three speeches on "Processors and Processing" will feature Odeen G. Olson, Recordak Labs, New York; J. Wesley Smith, President, Philadelphia Air Transportation Co., Norristown, Pa.; John Eerde, Mergenthaler Linotype Co.

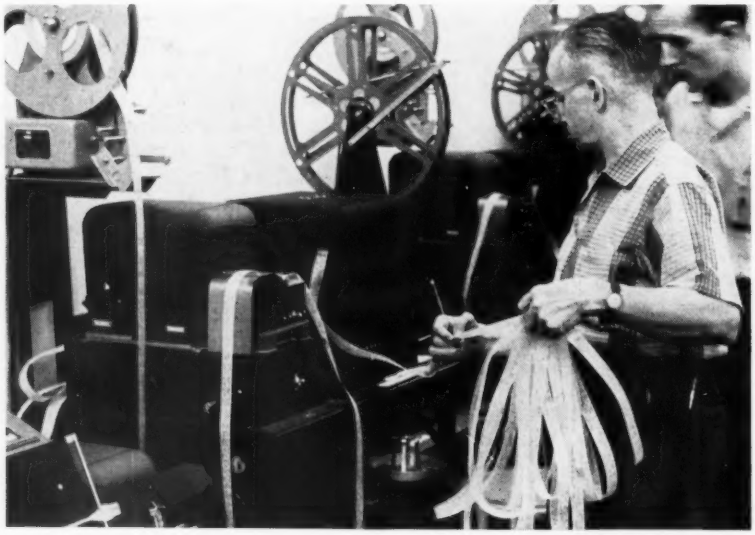
The last speakers of this session will be Dr. Thomas Kucera, C. Bruning Co., speaking on "Foreign Developments in the Electrostatic Printing Field", and Dr. Frederick J. Kolb, Jr., Eastman Kodak, speaking on "Protective Treatments for Microfilm." □

NEW YORK TIMES editors edit the International edition's copy.

Electronics Speed 'Times' to Europe

Communications miracles—a Teletypsetter and photo-electric scanner-enable *The New York Times* to be printed in Paris hours after the New York edition, then distributed and read throughout Europe the same day.

COPY coded on teletype perforator is proofread on printer.



TAPE OF proofread and corrected copy is fed into transmitter which speeds the news, in the form of electrical impulses, by radio or trans-Atlantic cable direct to Times plant in Paris.

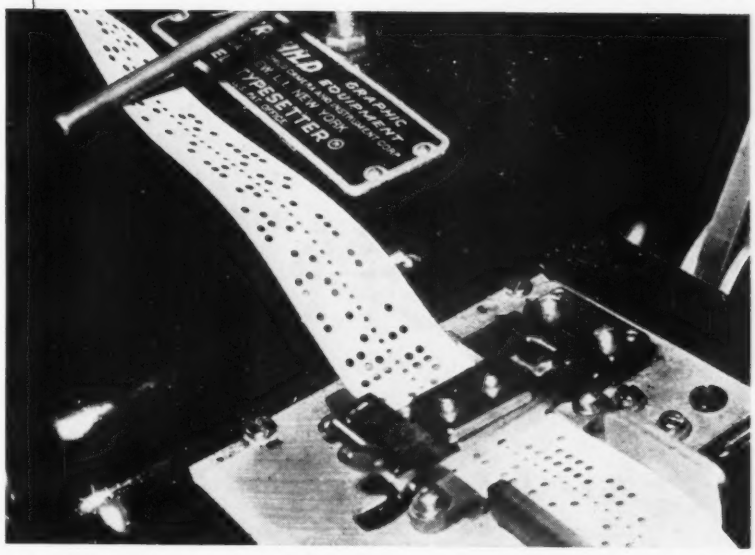
PHOTO-electric scanners transmit pictures, charts and maps from New York and translate them back to visual form in Paris.

The world gets smaller and smaller as communications get faster and faster. As you read this, today's *New York Times* is being read in Europe as a result of the twin miracles of electronic typesetting and speed-of-light radio and cable transmission.

Key link between the New York newsroom and European newsstands is Fairchild Teletypesetter equipment. An operator codes edited copy onto tape with a Teletype perforator. The punched tape runs through a printer, which types out news stories for proofreading. The tape is fed into a transmitter which speeds the news overseas in the form of electrical impulses. In Paris, these impulses actuate a tape re-perforator that creates a duplicate of the original tape.

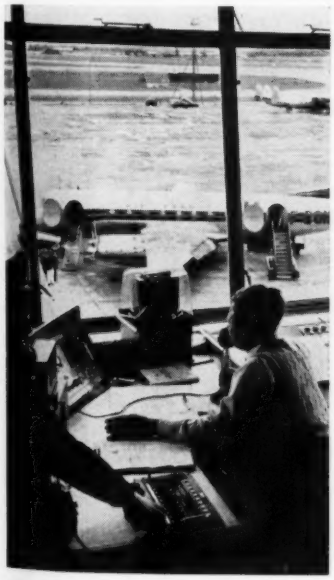
The punched tape is fed into a machine that re-translates into impulses which then automatically operate a typsetter. Pictures, charts and maps are transmitted by means of a photo-electric scanner. A receiver in Paris translates the signals back into visual images.

Final steps in getting the *Times* to its readers are conventional for big-time dailies. □



ELECTRICAL impulses received in Paris actuate tape perforator, duplicating New York tape.

PUNCHED tape is fed into machine to translate perforations into electrical impulses which then automatically operate Typesetter. Thus, type is set at about same time as in New York.



AIR DELIVERY to leading European cities brings readers "today's" Times Today!

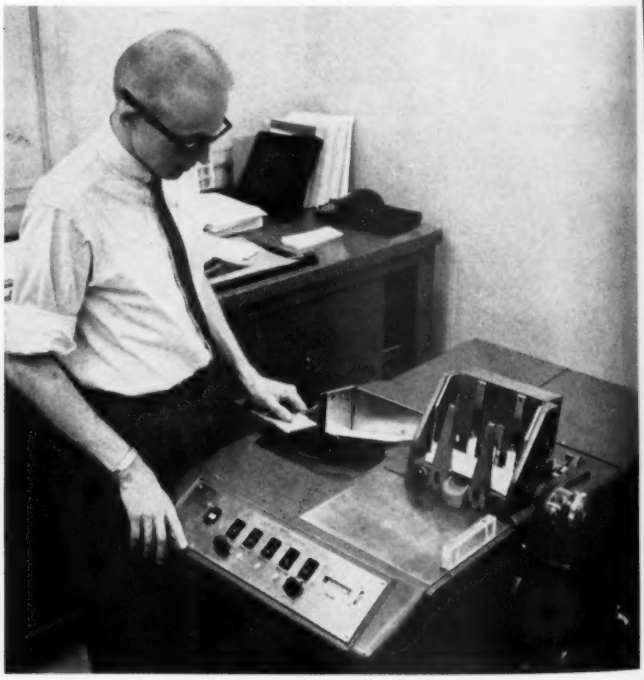
TYPE IS locked into page forms for printing the International edition in the morning hours while most of Europe sleeps.

CATALOG or price list copy is typed onto continuous card stock on a Justowriter.

PRIOR to printing time cards are packed in transfer boxes, put in plastic bags and then transferred to General Motors Photographic for photographing.

General Motors saves man hours, cuts costs and speeds delivery time of price and parts lists. Here's how.

CARDS containing copy are die-cut, key-punched and fed into the camera.



NEXT these cards are photographed by a Listomatic camera at speeds up to 230 per minute. This enables thousands of catalog entries to be made in an hour.

Cameras, Cards Create Catalogs

Photography, having made deep inroads in the printing field through the photo-offset process, is now contributing to an automated catalog and list printing system that enables General Motors to save hundreds of man hours and speed delivery of catalogs, price and parts lists to its dealers. The system combines the latest advances in camera techniques, typewriter composition and tab-card efficiency. Its result has been the simplification and reduction of tedious multi-typing and proof-reading of thousands of item names, numbers, prices and descriptions.

These lists run up to 40,000 items and are distributed as frequently as once a month. Before GM Photographic's Typographic Department set to work tackling the problem, as much as 40 days of "lead" time were needed to set type, proofread galleys, do layouts and print text. Proof-reading alone has taken up to 1,500 man hours. In addition, delivery dates are vital and thus overtime charges were also a factor. Today "lead" time has been sharply reduced and extra costs almost eliminated.

In essence this is the new system: initial copy is typed on tabular cards which are passed through and filmed by a Listomatic card recording camera. The processed film is cut to desired column size and laid out for plating and then printing.

The key to the system is the use of tab cards for camera input. The cards, submitted to the Typographic Department by any one of GM's many divisions, are typed on by Vari-Typers, Justowriter Composers or standard electric typewriters (equipped with special card holding platens). When the Justowriter is used, copy is first set on a Recorder which produces a punched paper tape. This tape is then placed on a Reproducer which automatically sets the information on card stock. Key-punched code holes tell the camera how many lines to photograph. When a Vari-Typer or standard electric machine is used, the copy is set directly on the die-cut card. In either instance, one, two or three justified or unjustified lines are typed on each card.

The cards are kept up-to-date easily either by the GM division concerned or the Typographic Department. Additions, deletions or corrections are made right on the individual card—either directly or again through a punched paper tape which is run through the Reproducer to prepare cards. Thus, whenever a new monthly or quarterly price or parts list or catalog is to be prepared, the copy is available instantly.

No matter who files and corrects the cards, they are housed in standard card file units and are hand-filed

continued on page 46

PROCESSED FILM is cut to desired column size and laid out for plating and then printing. Printing plates ready to be made into offset plates are seen above.

FINALLY price list copy is given a check to make certain no errors were made.

How this new team of IBM Supplies

IBM SUPPLIES SPECIALIST—uniquely trained to assist you in solving supplies problems promptly, efficiently and to your best advantage.

Specialists can help you

When it comes to cards, magnetic tapes or control panels, the IBM supplies specialists know—as few men do—just how to meet your needs. IBM supplies specialists are true experts...qualified by intensive training in IBM schools, plants, and design centers...qualified by extensive field experience.

Equally important, they represent a company that is unsurpassed for:

PROMPT SERVICE—IBM offers you same-day delivery on control panels and magnetic tapes, to meet emergency needs. In addition, through its nation-wide manufacturing and warehousing facilities, IBM can service *promptly* the card needs of any customer in America.

TECHNICAL ASSISTANCE—Through its network of Card Design Centers, IBM can assist you in developing card designs that will improve card handling techniques, reduce card consumption, and contribute to the economy of your data processing operations. As for control panels, your IBM specialist can help you profit from the ideas and experiences of others who have solved problems similar to your own.

PRODUCT QUALITY—IBM supplies are made to precise specifications which have been developed over more than 40 years of research, testing and performance analysis.

CUSTOMER EDUCATION—Through IBM's Customer Education Centers as well as through plant tours, supplies seminars and informative literature, IBM offers you an unsurpassed opportunity to achieve competence in the use and care of IBM cards, tapes and panels.

PRODUCT RESEARCH—To assure you the best supplies products possible, hundreds of IBM engineers and technicians work full time to develop new, improved products and techniques.

The next time you are in the market for punched cards, magnetic tapes, or control panels, call your IBM office. Talk to the IBM supplies specialist—an expert backed by experts—a man whose main job is to improve the return on your data processing investment.

IBM DATA PROCESSING

Circle No. 513 on Post Card

DESIGN ASSISTANCE—you can profit by the ideas and experience of others who have successfully solved problems similar to yours.

IMMEDIATE DELIVERY—control panels delivered "off-the-shelf" to meet your emergency data processing needs.

LONGER TAPE LIFE—assured by the unique IBM quality control program for new magnetic tape, plus an exclusive retest service which increases the life of your present tape by over 50%.

Sikorsky 'Lifts' Microfilm Use

Helicopter Manufacturer records obsolete drawings, revises current records and transmits drawing data on film.

by THOMAS J. MORGAN, JR., *Engineering Data Processing Supervisor*
and ROBERT E. KLINE, *Microfilm Supervisor*
Sikorsky Aircraft, Division of United Aircraft Corporation

Beginning modestly with service supplied by commercial filming companies, a microfilm installation has been made at Sikorsky to undertake three very important functions.

One operation is the record filming of cancelled and obsolete drawings. Hundreds of rolls of film are stored containing images of drawings on models dating back to the first VS-300 helicopter. References to these early history drawings are increasing since older model military helicopters are now being released for civilian purchase.

A second use of microfilm is the maintenance of the revision record file — an aperture card record containing original negatives of each revison of every active drawing. This file is subdivided into two parts: current and previous revisions, and provides an accessible reference to the complete revision history of any drawing. Since parts are being changed continuously, it is necessary to consult past revisions for knowledge of the part configuration for different periods of usage.

The third function is to transmit engineering drawing data of military models to the military services as revisions are made or new drawings released. This was formerly performed through the use of full-size Van Dyke submittals.

Need Good Drawings

Since several film generations may be required of these original microfilms, it is essential that good drafting practices be applied and an awareness by all personnel involved of the importance of good photolegibility of the original drawing for microfilming. An investigation into these photolegibility requirements has resulted in the issuance of a new chapter for the Drafting Room

Manual, which provides rules for "doing the job right the first time." This chapter, and its accompanying endorsement by the Engineering Manager, also recognizes the need for corrective drafting action on existing drawings and authorizes a procedure for handling this necessary task as the need arises.

The display which hangs on the wall of the Engineering Drawing Section is a physical reminder of photolegibility requirements. It also provides a concrete sample of the difficulties involved, since it includes an actual drawing and a reproduction from a third film generation. For example, it clearly demonstrates how light lines will be lost if mixed with dark, heavy lines; how lettering should be of constant density, fine and large letters, etc.

Replace Print Files

It is foreseen that a possible future use of microfilm at Sikorsky will be the replacement of print files now located throughout the plant with an aperture card system. At present, internal distribution copy is made by reduced offset copies.

The current military requirement for rolls of microfilm causes much duplication of effort for industry. When all new and revised drawings have been filmed for the historical file on a daily basis, all those, for example, with Navy production model requirements must be refilmed to obtain a roll for submittal.

Besides delay of drawings and the extra handling time, much confusion arises when a particular drawing must be located for some further change revision package. Therefore, a procedure is now being worked out which would provide the military overhaul bases directly with aperture cards of current revisions. This would increase the total number of exposures made but would require only a single placing of the drawing on the microfilm camera copy board. Tracings would be filmed in packages as released, with no need to segregate them by model for a second filming, and immediately returned to the vault for availability for the next revision.

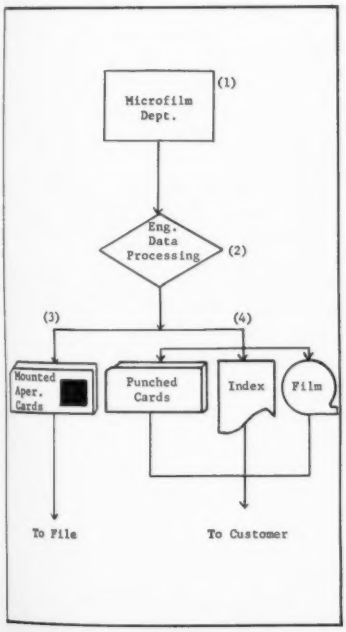
By this method, it should be possible to get current data into the hands of Overhaul and Repair personnel sooner, and also to reduce the time that tracings are tied up in the microfilm cycle. Under this procedure, distribution of aperture cards (requiring positive and/or negative copies) would be made to: the historical files (both internal and out-of-plant), the F.A.A., Naval Supply Depot, and the two Naval O & R stations, which may require several copies per model. Standardization for the use of original negatives — which after all provide the least loss of legibility — would seem to be a desirable direction at this time.

Equipment Needed

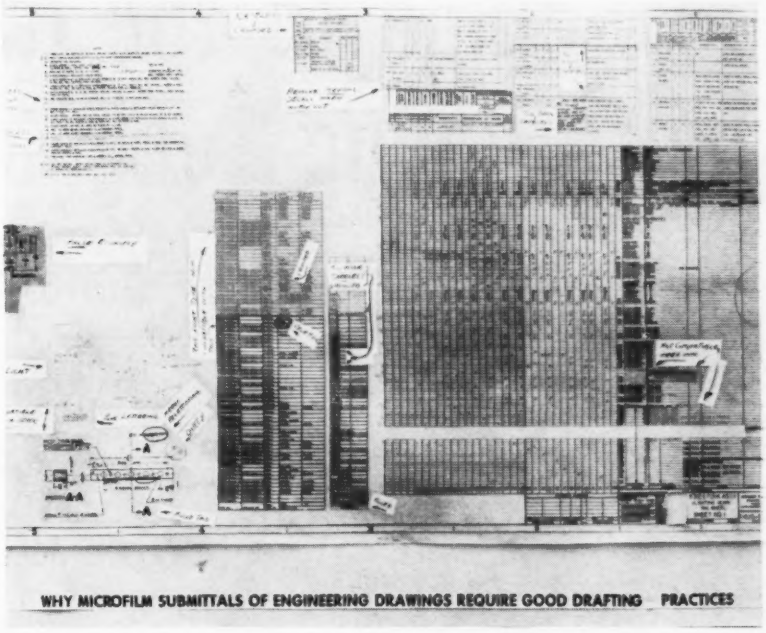
With the volume of aperture cards low in relationship to regular punched cards at any EDP installation, modified IBM equipment for handling aperture cards is usually not justified. Because of this, there is need for an aperture card acceptable to both industry and the military which can be machine reproduced, interpreted, sorted, and collated on standard equipment without the loss of image reproducibility.

After a considerable time spent on investigation of a Mylar envelope aperture card, developed by the Microseal Corporaton of Chicago, a decision is about to be finalized to adopt this card for Sikorsky microfilm use. Since the use of two

continued on page 45

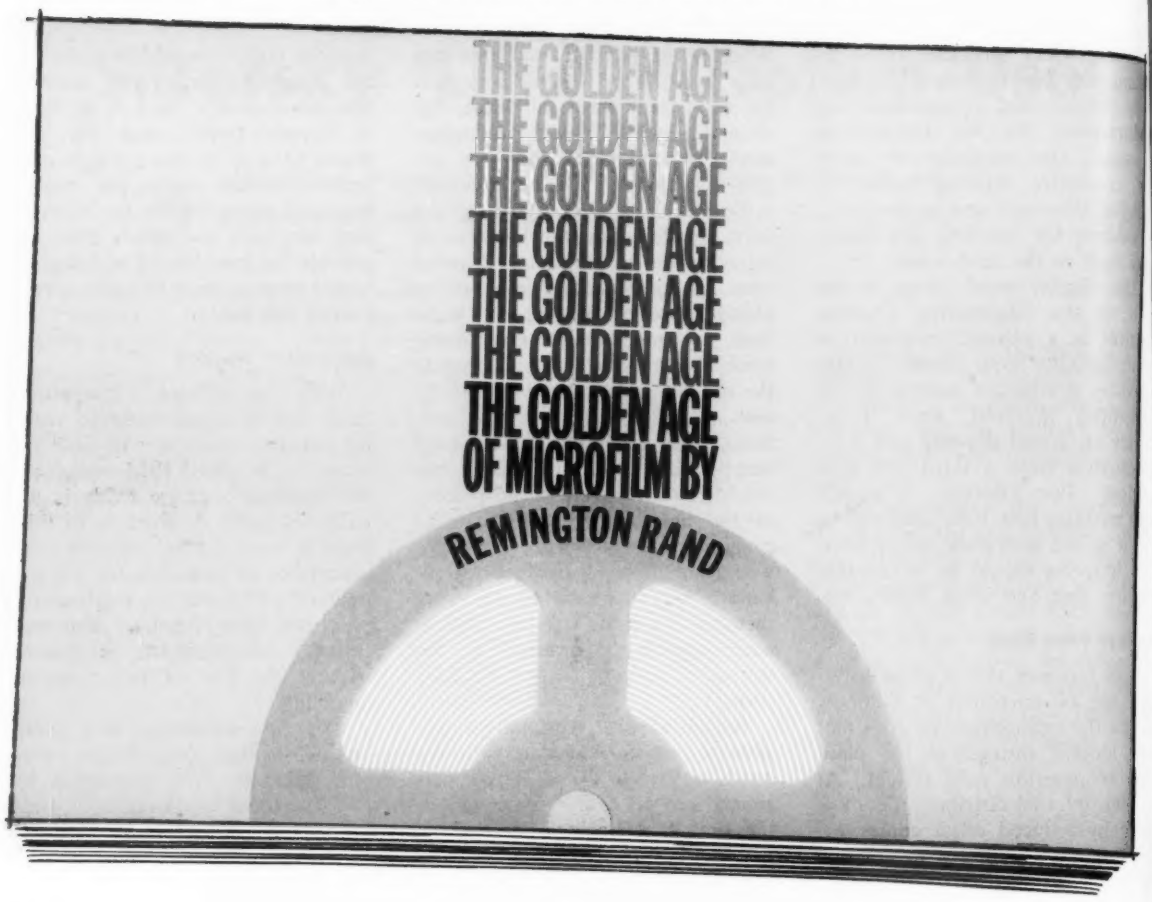


MICROFILM system at Sikorsky Aircraft is outlined in flow chart shown above.



DRAWING which hangs on wall of engineering drawing section is a physical reminder of photolegibility requirements for effective microfilming reproduction.

"Why didn't I know about this sooner..."



New guide to the latest microfilming techniques

—and how they can benefit your business!

Did you know that microfilm cameras can now film *both* sides of records simultaneously? That one file cabinet with microfilm has a greater storage capacity than 160 file cabinets with original papers? That Remington Rand high speed equipment copies over 500 records per minute — at a film cost of less than a dime? That the tremendous economies of microfilm are no longer limited only to giant corporations?

Get all the details in "The Golden Age of Microfilm," a valuable new, fully illustrated, 16 page guide.

Free! Send for your copy today!

Remington Rand SYSTEMS
DIVISION OF SPERRY RAND CORPORATION
122 East 42nd Street, New York 17, N. Y.

Circle No. 527 on Post Card

It sounds like science fiction but IBM is using computers to make other computers in an advanced production control program.

OVERALL view of IBM's Ramac 305 installation which handles production scheduling.

Can A Computer Reproduce?

by R. P. MULLER
Production Control Manager
IBM Corporation, San Jose, Calif.

Imagine a machine which reproduces its own kind. Science fiction? Partly. But, stretching a point, we at the International Business Machine Corporation's San Jose plant can prove this. In effect, it takes a RAMAC 305 computer to make other computers.

At the plant, an advanced production control program uses an IBM RAMAC 305 computer to control production right in the plant where RAMAC 305's are built. One of the jobs the RAMAC 305 has handled is scheduling and control of the production of hundreds of other RAMAC 305's.

In accomplishing this, the computer system has made it possible to set up central control over all scheduling, machine loading and material requirements for the manufacturing operations in the 200,000-square-foot plant. This facility employs some 2,500 persons, producing millions of dollars' worth of data processing equipment per month.

In terms of capacity alone, the IBM San Jose program is dependent upon computers. With many RAMAC 305 systems on open order in the plant, control of the complex fabrication processes would be practically impossible by other means.

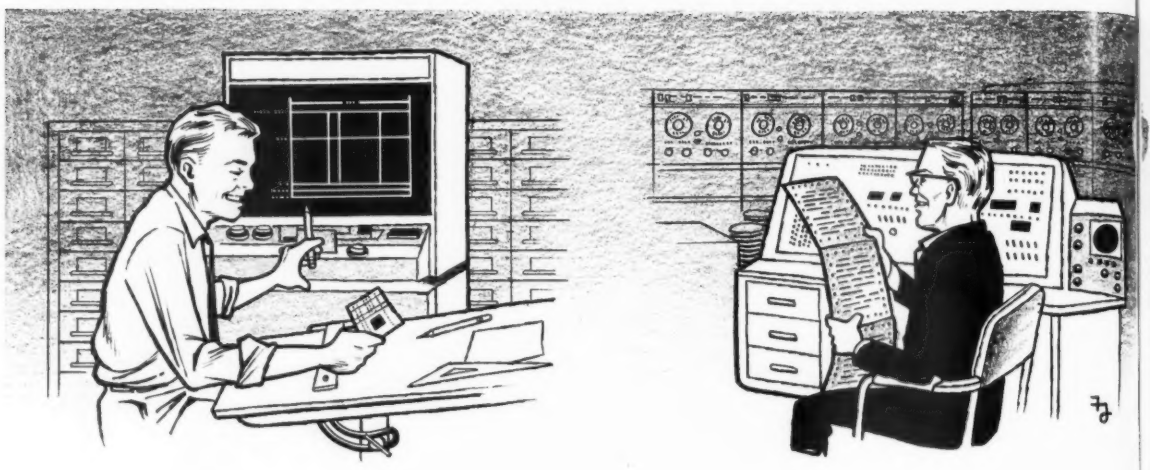
An important key to the workability of the control program lies in its management concept. In simplified terms, line management responsibilities in the IBM plant have been adapted to computer capabilities. That is, job duties of staff members have been made contingent upon the information which the person could expect to receive from the computer. Similarly, areas of responsibility have been sub-divided according to optimum computer capabilities.

A good example of this approach can be seen in the job duties assigned to the staff of twelve material analyzers who report to the production control manager. These people are assigned to procure the materials needed to build RAMAC computers at San Jose. There is no distinction made between purchased and internally-produced parts. Their job is to have working stocks of all parts on hand. The computer system will tell them what steps are necessary to produce the material internally — if this is applicable.

Another departure from the conventional is in assigning the material analyzers their areas of responsibility. In line with computer system optimization, these people are assigned areas of responsibility according to the usage value of the material they control. Each product used by the San Jose plant is as-

continued on page 39

R. P. MULLER



The Role of Records Management

Cooperation between the systems analyst and records manager are a must if company systems are to work.

by WILLIAM BENEDON
President
American Records Management Association

To assure the orderly and effective transition from one system to another within an organization calls for maximum cooperation among specialists of all kinds, particularly the systems man and the records manager. To coordinate well their respective responsibilities have to be clearly defined. Such definitions are only recent but perhaps not too surprisingly when the phenomenal growth of systems is considered.

Records management, properly, is a single operation. It is the administration of those segments of a system which lend themselves to predetermined controls. It includes the forms, reports, processed documents and equipment that live with a system from its creation to its completion.

The systems function, on the other hand, is far more general. A system is the *whole* of an administrative plan for doing work. Procedures, forms, policies, reports and methods are parts of a system. In connection with this, the creation, adminstration, preservation, and destruction of records are parts of a common objective. Records management, thus, joins related parts of a system effort into a logical and workable grouping.

During a systems study, Records Management provides data on existing forms, filing methods, reporting requirements, and the importance of the information involved. Once the system has been developed, Records Management completes the package by designing the needed forms, recommending the most effective equipment and retaining and protecting needed information. Thus, the systems function can be devoted fully to the investigation, analysis and development of the system. This time element gain is particularly significant with the increasing emphasis on electronic data processing.

What You Need to Know

What are the various phases of Records Management that the systems man should be familiar with? Such knowledge is vital if he is to be able to evaluate the ways in which new information processing methods (such as EDP) will affect the systems man-record manager's relationship.

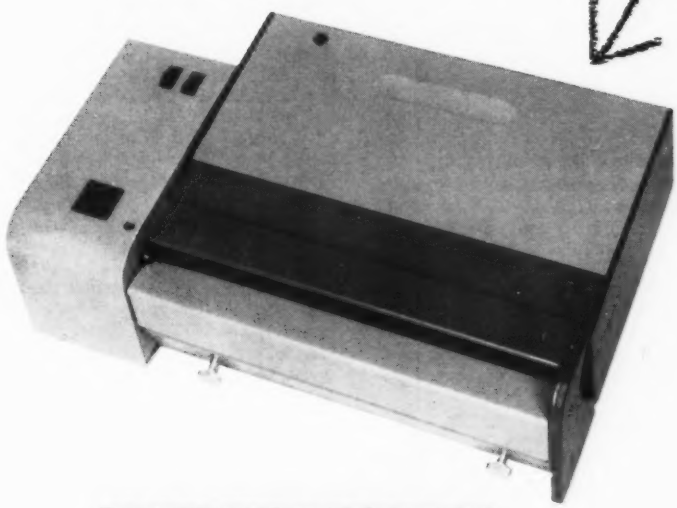
Uniform filing methods and equipment assure the proper maintenance of documents during their life span. This maintenance is part of record management and includes accessibility as well as orderly filing. A contemplated change in a system must take into account present filing systems and housing equipment. Records volume may be reduced but the clerical effort may well double if the maintenance requirements f the new records have not been carefully analyzed.

A venture into mechanized information retrieval, for example, necessitates thorough knowledge of existing records and indexing practices. Indexing methods are a constant concern of records administrators and, if their experience is properly utilized, time consuming investigations can be avoided by systems people.

Business forms are the most significant means of processing data through the departments of a company. This flow of information requires clerical and supervisory time for processing, handling and maintenance. Proper forms administration promotes accuracy, improves clerical efficiency, smooths work flow, and assures cost reductions. Lack of knowledge of form usage and design can present formidable barriers to conversion programs.

continued on page 38

this is it!



Microdealers
MICROFILM READER
Model B-16

The perfect companion to the CORVETTE Microfilm — the portable reader reproduces 8" x 10" image of standard 16 mm microfilm. Operates in any position.

NEW
For best results specify Microdealers new quality film. Available in both 16 mm and 35 mm.

MICRODEALERS

CORVETTE

The New Compact

in the Microfilm Field

The new lightweight, portable camera that puts microfilming within reach of every business.

This compact flow-type camera (4" x 9" x 13½") is extremely versatile — operates either as a motor-driven desk unit or a portable skimming camera for maps — drawings and other out-sized or bound material.

Its surprisingly low cost (about ½ that of competitive machines) now makes it possible for even small firms to employ microfilming economically.

For a demonstration, write today for the name of the Microdealer affiliate nearest you.

microdealers
"Your Assurance Of Quality"

Home office: 1560 Trapelo Road, Waltham 54, Massachusetts

NEW PRODUCTS

continued from page 8

Faster Printer 111

Improved speed for the *IBM* 1403 printer has resulted in numerical printing speeds of up to 1,285 lines per minute. Two new optional features are available to permit this more efficient operation. An interchangeable Chain Cartridge Adapter permits the operator to change from one type size, type style or special character arrangement to another without the use of special tools. The second feature, numerical print, more than doubles the output potential of the printer for numbers-only type data.

Card Punch 112

Varifab Inc. has announced a key punch for IBM cards which may be programmed for a number of specific forms through a convenient tabbing arrangement. Called Vari-Punch, the device offers visual control and accuracy through printed numbers of the punched hole value on the top edge of the card. Other features include an all-electric 12-key board plus Space, Tab and Hold keys. The Model A will punch-print 40 columns, while the Model B will accommodate 80 columns.

Computer Tape Cabinet 113

A Mobile Rotary File on a rollaway cabinet, designed to keep processing tape neatly stored and immediately accessible anywhere in the computer room, has been announced by *Acme Visible Records Inc.* The unit can be wheeled to whichever computer is available and revolves a full 360°. Metal cases hold the reels of tape and these can be visibly coded for easy reference. Drawers are also built into the cabinet below.

Check Rejuvenator 114

Hannifin Co. has introduced a machine designed to condition mutilated magnetic ink and punch card checks. The Silent Squeeze Check Conditioner with a capacity of 288,000 checks per day smooths all rumpled or creased checks and eliminates time-consuming hand sorting. Floor space required is only eight square feet and any office worker can use it with complete safety.

Digital Plotter 115

A compact, low cost digital plotter is being offered by *Electronic Associates Inc.* The Series 3100 "Dataplotter" is said to provide improved accuracy and speed for converting data from any digital computer system to graphic displays of engineering tests and problem solutions, sales, production and cost data. The unit is equipped with transistorized control circuitry and is able to receive punched card, tape or keyboard input

Copier Solution Dispenser 116

Cormac Photocopy Corp. now offers its automatic solution dispenser for use on all makes of machines. Designated the Flo-Kit, Model PF 125, it hooks into the tray of any photocopy unit and pumps the solution in or out as needed, eliminating hand operations. The kit comes in a sturdy metal carry case which measures 5½"x9½"x12½". Price: $49.50.

Automatic Dialer 117

Automatic dialing with a magnetic memory has been developed by the *McGraw Edison Co.* Designed for personal use, the device, called Rapidial, will "remember" and automatically dial up to 290 different phone numbers by the simple push of a dialing bar. In use, an alphabetized roster is twirled for the correct name, the receiver is lifted and the dialing bar depressed.

Paper Tape Handler 118

The Dykor Model 4566 Servo-Spool bi-directional perforated paper tape handler is said to offer an economical

WHY AIR FORCE HAS ADOPTED MICROFILM FOR ENGINEERING DRAWINGS

Recently the Air Force issued new contract requirements of vital importance to companies that are doing—or intend to do—business with its various activities. In essence, the Air Force has made the use of microfilm mandatory for most engineering data and records relating to items delivered by contractors and their vendors.

The new requirements (MCP-71-77) incorporate standards and specifications issued earlier by the Department of Defense for its Engineering Data Micro-Reproduction System. The Air Force move is indicative of the importance of microfilm to the government in saving time, money, and space.

The Air Force is convinced that working with microfilm is easier than working with paper, that it is more efficient and costs less. Filmwork, in other words, is easier and more practical than paperwork for engineering drawings and records.

This is not news to the many industries that use microfilm today. They know that microfilm is a highly efficient and effective production communication tool. They know that microfilm can do many jobs much faster and much more accurately, with almost fantastic savings in time and money.

3M makes microfilm easy to use

method for the handling of large quantities of tape at high speeds. Made by *Digitronics Inc.*, the unit permits forward or reverse reading of perforated tape at speeds up to 400 characters per second. Eight-inch reels containing 500' of tape are controlled by a three-zone contactor system which performs the same function as a full servo system and accepts 5 to 8 level tapes interchangeably.

Addressing Machine 119

An improved Model 600 A-Dress-R metal plate addressing machine has been announced by the *Nettle Mfg. Co.* The new machine will incorporate a feather touch stamping arm that is claimed to lighten action, reduce operating fatigue and speed up production. Magazines with a 150-plate capacity may be loaded and unloaded semi-automatically for fast operation. The machine is also finished in chrome metal plated trim.

Accounting Machine 120

A low-cost version of the IBM 407 accounting machine, the model E4, which will prepare printed reports on continuous or single sheet forms from alphabetic or numeric information, has been announced by *International Business Machines*. The new model, which obtains data from punched cards, will also print at the rate of 150 cards per minute and can be connected to a summary punch for the simultaneous punching of summary cards.

Microfilm Camera 121

In an effort to expand the versatility of microfilm aperture cards, *Recordak* has introduced its Card-to-Roll film printer which is designed to copy negative or positive microfilm images mounted in "D" aperture cards onto roll film. A new vacuum frame principle is said to eliminate the need for glass flats and thus give added protection to the original film. Other features include an image counting device and an exposure and recycling time of 2 seconds.

Rear Projection 128

The latest In-Line Digital Display by *Industrial Electronic Engineers* operates on a rear-projection principle. It features a condensing lens and a projection lens. The condensing lens contains 12 individual "positions" which have printed on them the desired digit or character. When one of the 12 lamps at the rear of the unit is lighted, it projects the corresponding digit or character on the condensing lens through the projection lens onto the viewing screen at the front.

Schedule Board 129

Simplicity, flexibility and ease of operation are said to be the outstanding features of the Memo-Flex manufactured by *Memo Flex Div.* The unit comes complete with all elements allowing the user to make his own custom layout using pressure-sensitive tapes and letters. The visual control board is designed to mount on a wall. For areas where the information may be seen by the wrong people, there is available a security shade which may be easily attached.

Desk Size Computer 134

Burroughs Corp. has introduced a desk-size computer, the E103, which has been specially developed for business data processing. Said to be the lowest priced general purpose computer on the market, it will handle such jobs as sales analysis, payroll, tax billing and interest projection tables. An accounting machine printer and a new control unit are standard equipment with the E103. Capacity of the magnetic drum memory is 220 12 digit words plus sign. Price: $29,750.

continued on page 46

When data is on microfilm in FILMSORT Aperture Cards, facts that speed production are at your finger tips in just 90 seconds. And with a THERMO-FAX "Filmac" Reader-Printer you can take more than a look—you can take an enlarged copy in seconds.

Microfilm really became practical for industry only a few years ago when Minnesota Mining and Manufacturing Company introduced THERMO-FAX "Filmac" Reader-Printers. For the first time, the advantages of a reader and a printer were combined in one compact, low cost unit. Today there's a "Filmac 200" Reader-Printer that has a huge viewing screen, simple pushbutton operation, makes copy after copy in 18" x 24" size or half size prints of engineering drawings and data from microfilm in FILMSORT Aperture Cards. A "Filmac 100" Reader-Printer delivers 8½" x 11" copies in seconds, too.

FILMSORT Aperture Cards and "Duplicard" Copy Cards long used by government and industry are designed to meet military specifications and standards. These are the punch cards that make microfilm so easy to file, find, and use.

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RECORDS MANAGEMENT

continued from page 34

One of the major effects of automation is the change in design specifications in company forms. Such changes are not the generally accepted day-to-day revisions but total change to new ways of doing things. For this reason, the relationship between data processing personnel and forms personnel must be one of close harmony, particularly as they concern areas of responsibility. It may well be desirable for the data processing people to assume major responsibility for forms design as they effect EDP machine applications.

Retention schedules are another part of records management that are of importance to systems analysts. When properly developed through an orderly system of inventory, appraisal, and management approval, such schedules sharply reduce record-keeping costs. Automation will also affect this phase of records management. More and more records are being translated into electronic impulses. Magnetic tape has replaced numerous paper documents and manual reports. Two problems become readily evident: first, that of the admissibility of magnetic tape as evidence in courts of law, and secondly, that of the retention characteristics of tape.

The admissibility of tapes will undoubtedly have to go through the same acceptance stages as microfilm; to date there has been no legal test. Records Managers can assist in systems changes by making certain that company attorneys and auditors are kept informed as the character of records change. We now have about fourteen years of experience in the life span of tapes (plastic magnetic recording tape) and tests have shown that such tapes written that many years ago can still be read satisfactorily. It has also been opinioned that acetate tapes can last 25 to 30 years before they may become brittle. No doubt the quality of tapes will be improved but care must be taken that those subject to long and constant use are carefully selected.

Vital Records Protection

To meet *possible disasters* resulting from man-made or natural causes, businesses must provide for the protection of their vital records. These include records needed in the event of a disaster to (1) resume and/or continue operations, (2) recreate the legal and financial status of the organization, (3) fulfill obligations to stockholders, employees, and/or outside interests. What steps are being taken to protect the wealth of information gradually being placed on tape? The recent fire in the Pentagon gave vivid proof of the cost and operating problems that can result from a destruction of such records. While equipment losses can be minimized by replacement within a reasonable period of time or by utilizing similar equipment in other company locations, loss of data tapes could be quite serious. Reconstruction, in part, might be possible, but much infor-

Rol•Dex proves ideal for master aperture card file in Unitized Microfilm Systems

As with so many automated record systems, the basic features of Rol•Dex record handling equipment prove to be the most efficient — the most economical.

because ROL•DEX features provide

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Cards are filed in rolling trays that are completely open for fastest reference.

☆ **Capacity**
Rolling carriages can be tiered, one above the other to give greater capacity without reducing all important speed.

☆ **Organized Work Center**
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Rol•Dex is fitted to your volume of records. There is also a "Rol•Dex, Jr." unit for use in decentralized (departmental) unitized microfilm systems.

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mation could never be retrieved unless special precautions are taken.

Protection programs today must, therefore, include master files, completed and partially completed programs, machine procedures, instruction tapes, and program listings. As with any program, protection may bring added costs. In the event of disaster, however, the cost, whatever it may have been, will represent a most worthwhile investment.

From these brief observations the role of Records Management soon becomes apparent. It too must therefore be re-appraised in terms of new innovations in office methods. Properly recognized and working in close cooperation with the systems function, it can do much to assure company-wide efforts needed to coordinate, simplify, and mechanize data processing activities. □

REPRODUCING COMPUTER

continued from page 33

signed an M. R. V. (monthly requirement value, or dollar-usage) rating. Under this plan, for example, an item which cost $10 and was used in quantities of 1,000 per month would be rated the same as a $1,000 item on which usage was 10 per month. With the relative importance of materials depending on the amount of money to be spent on items, experienced analyzers are assigned to the more costly items.

The material classification breakdown according to dollar-usage carries a built-in check feature. When expenditures for an item run higher or lower than its assigned classification, this presents an automatic signal for review and re-evaluation of inventory levels and procurement policies. A numeric-financial approach, geared to computer capabilities, is also used in production scheduling, machine loading and operation analysis.

Every week, the computer generates complete status reports for each operating department or material category. These reports present complete recaps of current operating information. For example, in a production department, the report lists the scheduled hours of work for the preceding week. Then it goes on to indicate the actual production hours. A separate line on the report details all down time. Separate categories indicate whether the down time was due to lack of available work, machine breakdown, lack of material, absenteeism, and so on. The same report gives the complete status of all work in this department's category for which there are outstanding purchase orders with vendors.

Also detailed is a complete list of work on hand. This covers total hours and weeks (in fractions). Both the future work load and the past week's production are broken down to indicate the number of individual jobs they represent. An-

continued on page 41

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Systems

Micro-Reproduction System 201

Minnesota Mining & Mfg. Co. Folder discusses the standards of the engineering data microreproduction system used by the Department of Defense.

Ready-to-Plate Negative 202

Varityper Corp. Information on the Foto-List system which produces a ready-to-plate negative in sequential listing form from original data cards.

Microfilming Information 203

The Gevaert Co. of America, Inc. 28 pp. booklet gives valuable information and technical data about microfilming.

Filing System 204

Microtape Systems. Data on a low cost filing system for business records.

Planning a System 205

Charles Bruning. "Basic Microfilm Indexing and Filing Techniques" tells how to achieve maximum results from a microfilm system.

Computers and Accessories

Calculator 207

International Business Machines Corp. Brochure presents a thorough control-panel summary of the low-cost Model B-1 609 transistorized calculator.

New Frontiers 208

Radio Corp. of America. EDP equipment installation and maintenance services detailed in an illustrated brochure.

Panel Accessories 209

Tech Panel Co. Brochure on such units as "Piggy Back," Dial Switch and Card Marker.

Integrated DP Equipment 210

Burroughs Corp. Illustrated brochure describing complete line of equipment and showing applications.

Data Processing Ribbons 211

Phillips Ribbon & Carbon Co. Brochure and price list on data processing ribbons for all makes of EDP equipment.

Dial-O-Verter 213

Digitronics Corp. Brochure describing equipment that reads and writes on punched tape or cards or magnetic tape at it is sent over telephone lines.

Cost Reductions 214

Management Assistance, Inc. Bulletin on WROC 452, a portable unit to increase machine efficiency in all systems.

High Speed — Low Cost 215

Control Data Corp. Brochure on characteristics of the 160 computer, its accessories and applications.

Control Panels 216

Systems Sales Corp. Price list and spec sheet on self-containing control panels for use with IBM machines.

Data Processing 217

National Cash Register Co. Booklet on integrated and electronic data processing equipment.

General Purpose Computer 218

Electronic Associates, Inc. 20-page brochure on Model 231R, general purpose analog computer.

Tape Reader 219

Ferranti Electric, Inc. Information on Type 271 Tape Reader, militarized, 300 characters/sec. reading speed and 1000 characters/sec. advance/rewind.

Data Processing 220

Smith-Corona Marchant, Inc. Description of Typetronic 6615 computer with electric typewriter input-output for business use.

Large Scale System 221

Philco Corp. Data on the Transac S-2000, the only large-scale data processing system utilizing parallel logic and asynchronous operation.

Microfilm Equipment

The Golden Age 223

Remington Rand. Pop-out booklet which demonstrates full line of microfilm equipment and shows applications.

Portable Microfilmer 22

Recordak. Flyer on the Recordak po able microfilmer with a 20-to-1 reducti ratio.

Processor 22

Oscar Fisher Co. Data on Process Models G-6 and G-12, automatica processing film or paper 6" and 1 wide.

Microfilm Printer 22

Riken. Info on how microfilm can enlarged and printed on A-4 papers the Ricohfax M4 printer.

Universal Reader 22

Documat, Inc. Description of a m crofilm reader for both roll film a unitized film.

Magazine Camera 22

Photo Devices. Data on the mod PD1100, a 35mm microfilm came with removable magazine and 10 capacity.

Aperture Card 22

Microseal Corp. Description of a ne aperture card in which the film is pr tected by a triacetate covering.

Rapid Microfilm Processing 23

Andrews Paper & Chemical Co., In Information about the rapid enlargeme and processing of microfilms that i possible with the Rollacopy process.

Microfilm Reader 23

Taylor-Merchant Corp. Informatio about compact microfilm reader to rea roll film, aperture cards and sheet film

Microfilming Works for You 23

American Microfilming Service C Brochure on complete services offered in microfilm and Microtape areas.

Microfilming Scholastic Records 23

Microfilming Corp. of Amerca. Cas histories and typical applications in a highly specialized area.

Mono-Copy Paper 234

Anken Film Co. Data on how positive copies can be made directly from negative microfilm.

Transdigital Systems 23

Cook Electric Co. Brochure on a new division that will handle complex elec tronics applications for government, mili tary and business.

Microfilm Facilities 236

Microdealers. Folder describes na tionwide services of this company which include microfilming of engineers' drawings, public records, etc.

Microfilm Processing 237

Houston Fearless Corp. Brochure on the Microfilm Labmaster for microfilm processing.

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COMPUTER REPRODUCES

continued from page 39

other set of breakdowns shows which work is behind schedule, on time or ahead of schedule.

Here, too, the principle of adapting management functions to the capability of computer systems becomes apparent. The computer is used to reduce total, complex plant operations to current statistical breakdowns. These statistics are, in turn, set up so that trouble spots will be immediately pinpointed, making it possible for production management people to focus their efforts in the areas where they are most needed. This, basically, is the major advantage of computerized production control systems such as this RAMAC program in use at IBM San Jose. □

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Miscellaneous

DP Accessories 23

Diebold, Inc. Flyer on modular st age units for data processing — tr cabinets, files, etc.

Tape Storage 23

Monarch Metal Products, Inc. 18 booklet on magnetic tape storage a handling equipment currently availabl

Stretching Walls 24

Dolin Metal Products, Inc. Color catalog with space-saving ideas for tab lating departments.

Data Processing Courses 24

Business Electronics, Inc. Catalog d scribes electronic data processing cours

Miniaturization Equipment 24

Keuffel & Esser Co. Information abo two dynamic new developments i miniaturization of engineering drawing

Photostat Photocopiers 244

Photostat Corp. Specifications on Ph tostat 14-18 photocopier and Photost 18-24 photocopier plus price list.

Eye-Catching Effects 245

E. I. duPont de Nemours & Co. Fly on graphic arts effects possible wi Cronapaque film and Cronaflex plates.

Small Volume Record Handling 246

Rol-Dex. Leaflet on Rol-Dex, Jr., portable unit to handle from 2,000 t 12,800 various sized records.

Tandem-Type Collators 247

Thomas Collators, Inc. Literature de scribing redesigned 20 and 32-sheet tan dem-type collators.

Electronic Reproducer 248

Gestetner Corp. Information on th Gestefax. Reproduces photos electroni cally, also office forms, drawings directl on mimeo stencil.

Photocopy Machine 249

Cormac. Information on the new 500 photocopying machine which has one step operation and cuts time by one third.

Punch Card Inserter 250

Bell & Howell Phillipsburg Co. Data on inserter which automatically inserts and mails punch cards.

Addressing Machine 251

Scriptomatic. Data on the 10-S, an automatic list addressing machine.

Computing Systems 252

Bendix. Bulletin QC-020-R110 outlining various G-20 computing systems.

EDP's Future: A Human's Tool

AMA conferees stress EDP systems role in management information and forecasts.

What should a company do with information collected and compiled by the fastest computer and stored away in the highest capacity memory unit? Two answers were dominant in speeches given before more than 600 attendees at the AMA's 7th Annual Data Processing Conference and Exhibit, held March 6-8 at New York's Statler-Hilton Hotel.

First, if a company requires such broad EDP capacities, it should concentrate on what several speakers called "the forward look," utilizing the system to forecast production needs, marketing prospects, and the financial future of the company.

Second, a company should consider whether it needs all the information collected, and, if not, restrict its programming to relevant information and reporting goals.

In fact, it was said, a company should consider whether it needs the largest EDP system available. Several speakers stressed that when recommending hardware to management, they considered two elements: what information does management want and what hardware will do this job most efficiently and economically.

The purpose of the Conference, according to AMA Vice-President Steven L. Shea, was to bring reports of actual company experience in creating integrated data production lines and management information systems. This view was carried through by all speakers, with descriptions of systems operational and in development for all phases of business and manufacturing. In addition, theories of information systems were discussed.

Though EDP hardware developments and applications were presented, the panel members' primary consideration was the development of information systems moulded to the individual company's needs. Acknowledging the technical developments of the 1950's and plans for the 1960's, they emphasized that a new era had come, that of integrated information systems oriented to management's information needs.

This requires management to set up objectives for a company and coordinating all phases of operation toward achieving the objectives. In this light, EDP is only a tool of management, but increasingly recognized as an important and useful tool, if properly utilized.

Some of the tools were demonstrated at the concurrent equipment exhibit. Among the companies exhibiting were Mac Panel, Monroe Calculating Machine, Royal McBee, Stromberg Division of General Time, Addressograph-Multigraph, IBM, Remington Rand Univac, Minneapolis-Honeywell Regulator, National Cash Register, New York Telephone, American Telephone & Telegraph, Digitronics, Farrington Electronics, Jonker Business Machines, Bendix Computer, Hancock Telecontrol, Philco, Standard Register, and Standard Instrument. □

Cut Paper, Save Time, Speed Work

Revamped paperwork procedures have helped Harnischfeger Corp.

by WARREN COULTAS
Systems Manager
Harnischfeger Corporation

WELDING and fabrications superintendent watches office girl make copies of work orders used in a newly initiated system.

A simple operation, if repeated often in business and industry office procedures, can account for more working time than an occasional complex operation. A typical situation involves paperwork.

A study made two years ago showed our company was running into time-consuming and often costly delays by typing copies of work orders, letters, memos, reports and other communications. Consequently, tests showed that four copying machines strategically located in our main plant at Milwaukee would expedite the flow of paper and accelerate factory and office procedure by reducing copying time from minutes to seconds per copy. The result has been savings of hundreds of man-hours a year, faster reproduction and great savings in filing space. The four machines we chose were Thermo-Fax dry copyers.

WARREN COULTAS

One machine, installed in the export department, is used to duplicate correspondence with our company's salesmen and representatives throughout the world. An additional time-saver introduced by the department is the short-note reply system. Under this system, a brief reply is written on the bottom of the original incoming letter. A Thermo-Fax copy is made and sent to the letter writer, the original being retained for the files.

Using this procedure it takes about one minute to answer the letter instead of an average of ten to fifteen minutes previously. The new method saves the time of both executive and secretary and cuts down on needed filing space since the original letter and reply are on the same sheet of paper.

On its machine, the traffic department duplicates freight bills and bills of lading, forwarding the originals to the credit and invoice departments and retaining copies for its files. Thus it avoids any retyping of file copies.

The third machine, located in the production control department, is used to copy correspondence, sales sheets, maps and charts, and reports.

Four Card System

Installed in the fabrication and welding shop, the fourth machine has been used in conjuction with a new system operation. The system operation requires four cards: a multiple job report, a master work order and copies of the order for the timekeeper and the worker, duplicated on the machine. For the worker's copy, we use a special

gummed-back Thermo-Fax paper which can be affixed to the templet, or pattern he receives.

By copying the order on the machine, we estimate having saved fifteen minutes in processing each order. Based on an average of 180 orders per day, the time saved is forty-five man hours daily. Translated to dollar savings in terms of a worker's salary and maintenance overhead expenses, this would be nearly $150 per day.

The machines are also used by adjoining departments. Traffic's machine, for example, is shared by our legal, sales, controller and general executive departments.

We have found that in each of the four locations in our plant the machines have made a valuable contribution to operating efficiency with a saving in man-hours and dollars that has more than justified their existence □

SIKORSKY

continued from page 31

different types of aperture cards would be undesirable, it will be necessary to obtain military acceptance of this new card and to incorporate it into the necessary government specifications.

In-Plant Filming

All filming is done internally on a Microline MT/O camera with original dye-back film processing by a commercial laboratory. Upon return, the master film is copied, producing a work copy roll which is used by key punching and verifying. To insure scratch-free submitted rolls, this master negative is not viewed in a reader. Also, use of the positive work copy to judge for legibility of the master negative provides proof of the film's capability for reproduction.

Since microfilming methods, techniques, equipment, and products are rapidly improving, it is necessary to keep in close contact with microfilm service organizations. Both the American Microfilm Service Company from New Haven, Connecticut and Graphic Microfilm of New England from Waltham, Massachusetts have been invaluable associates.

In addition, close and personal contact with military and D.O.D. officials helps to prevent possible difficulties from arising, regarding adherence to government specifications. It has been our experience that these officials are most eager to offer assistance.

Much progress in the field of records management has been made both by industry and the government. This not only includes microfilming, but also data processing, simplification and all of the other facets of records management. It is our intention, at Sikorsky, to continue our growth in this new — and altogether — fascinating field in order to better serve our customers. □

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For fast information on any product, literature or advertisement use the handy Readers Service Card, between pages 40-41.

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- **Designed for use with all reproduction equipment using rolls of paper.**
- **Cuts 40-feet per minute.**
- **Accommodates paper up to 12-inch width and weights from 20 lbs. to 120 lbs. card stock**
- **Spool holds roll of paper 13-inches in diameter**
- **Operates on 110-120 volts, 60 cycle, AC current**

Used by leading banks, insurance companies, libraries, state motor vehicle bureaus, photo finishers, state and federal government agencies since 1950.

SEE US AT THE NATIONAL MICROFILM CONVENTION — BOOTH NO. 27
ALVES PHOTO SERVICE, INC.
14 Storrs Avenue *Established 1916* Braintree 84, Mass.

Circle No. 501 on Post Card

CARDS, CAMERAS AND CATALOGS

continued from page 27

into drawers in page sequence. The multitude of cards that represent a catalog include special cards (color edged) which indicate headings, page locations, blank spaces, and other information pertinent to the printing of the individual pages. Proof-reading is done on-the-spot at the time a correction is made effecting a great time saving.

Coding of the cards offers the possibility of selecting the number of lines to be filmed from each card. The code is scanned by a photocell in the camera which regulates the shutter opening. Passed through the camera at the rate of 230 per minute, the cards are filmed on continuous 400-foot rolls. This means that thousands of lines are photographed in an hour. Varying film widths are available according to the column width desired.

The film is processed in a "Process-All" automatic processor and the resulting negatives are laid in printing flats that serve for platemaking or single proofs. Using this system, GM estimates that it has reduced preparation time by many days and simultaneously increased the accuracy of its publications. The system has resulted in less proof-reading and thus less possibility of error.

As it has in automotive engineering, General Motors has perfected a system to improve this particular phase of customer service. □

INDUSTRY NEWS

continued from page 6

pressure-sensitive pin-feed labels.

Faced with a move to a new building it was necessary for the commission to spot precisely each of more than 11,000 pieces of furniture being brought from different locations. Mr. Steinle suggested that IBM cards be punched for each piece of furniture and then labels printed on an IBM 407 accounting machine. Shown on the label was the item and a code indicating the exact new position. The finished labels were sent to the various locations where they were stripped from their backing and pressed into position on each item.

● Here and there: Demonstrati of the Bendix G-20 and its acces ries highlighted the third G-20 Us Conference held in Beverly Hills. Rem Rand Univac announces will produce cost accounting repor for agencies . . . The C & O Railwa and Smith-Corona Marchant ha signed an agreement by which th latter will be leased a million doll communications system. . . An ele tronic reading and printing syste which makes it possible to tran mit mail from city to city in se onds, has been developed b Stromberg-Carlson and Halo Xerox.

● Maintenance of high servic center performance and ethic standards is the aim of the recentl formed Association of Data Proc essing Service Organizations (AD APSO). Made up of leading U.S and Canadian companies in the computer and punched-card servic field, the Association's membership is limited to those companies which perform on their own premises work requiring the utilization of such equipment as punched cards, punched and magnetic tapes, optical readers and computers, and serve firms not having sufficient work to justify investing in their own EDP system. Officers of the organization are: president, Romuald Slimak, Remington Rand; vice-president, Z. V. Zakarian, RCA; treasurer, C. G. Green, Statistical Reporting and Tabulating Ltd.; executive vice-president and secretary, W. H. Evans. Full information on membership and regional meetings is available from W.H. Evans, 1000 Highland Ave., Abington, Pa. □

NEW PRODUCTS

continued from page 37

Printed Forms 130

Consolidated Business Systems Inc. has developed a line of business forms on which key control data is printed in giant-sized type. The company's line of forms can be adapted to any system where data recognition is an important factor. The letters or numbers are 1" or 1½" high and are particularly useful where forms must be identified from a distance such as bin and pallet tickets, packing slips and shipping labels.

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Business Electronics Inc.
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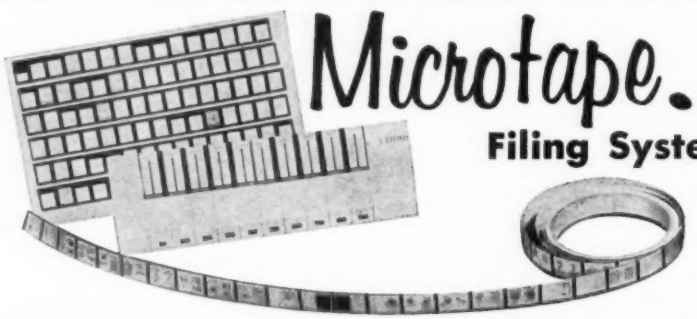

Microtape... Filing Systems

MICROTAPE is designed for business records (systems applications) or single copy or minimum copy uses. It consists of 100' rolls of 16MM or 35MM positive microtext printed from negative rolls having a pressure sensitive adhesive laminated on the back side. These rolls are then cut into proper units and applied to an ordinary index card.

MICROTAPE SYSTEMS 44 LAURA STREET NEW HAVEN, CONN.

Circle No. 517 on Post Card

Number Checker 131

A special-purpose calculator said to simplify the adoption and use of self-checking numbers in accounting systems has been introduced by *Management Assistance Inc.* Called the WROC 330 Auto Checker, the unit will generate the check digit of a number during the accounting record or will check the accuracy of a number when the digit is already known. Information may be fed into the machine's keyboard or through attached key-operated machines and the check digit is flashed on the front panel or will generate data to be fed to tape or punch cards.

Bill Inserter 132

A Phillipsburg Inserter designed to insert and mail irregular quantities of punch cards used in billing has been announced by the *Bell and Howell Phillipsburg Co.* The inserter automatically selects a statement card and a varying number of charge cards from one station, feeds additional inserts from other stations, opens envelope flaps, inserts, moistens, closes and seals envelopes, imprints postage and an advertising message, counts and stacks – all in one continuous sequence. The cards are also inserted so that the addressed side shows through a window envelope.

Tape Punch 133

A digital device that allows for remote control adding machine operation has been introduced by the *Victor Adding Machine Co.* Called the Digit-Matic Data Punch, the unit may be activated through digital converters or other equipment and yields a printed record for immediate information plus punched tape for further automatic handling. The punched tape contains coded information in 5, 6, 7, or 8 channels. Price: $2,000.

Dial System Accessories 135

The flexibility of the Dial-O-Verter System introduced by *Digitronics* has been increased with the addition of two new options to the system. A D755 High-Speed Tape Distributor will separate out the individual records of a paper tape file according to the data contained in the record itself. The unit drives up to six output punches and distributes incoming data to any one or more of the six output paper tapes. The second optional feature is instantaneous switchover in the event of equipment failure through the D560 Switching Unit.

Aperture Card 136

The Microseal "D" aperture card featuring full protection for the microfilm image by means of an acetate pocket has been introduced by *Remington Rand* in conjunction with the Microseal Corp. Other features of the card include short pulldown, sorts in all standard EAM equipment and easy removal. Accessory equipment includes a viewer, diazo duplicator, and hand mounter.

Photocopy Paper 137

Agfa has added a Multicopy Paper to its line of photocopy materials which permits five photo-exact copies to be made for as little as four cents each. The new paper yields clear, sharp, black-on-white copies from pen, pencil or crayon notations. The copies are permanent and acceptable as legal evidence. Quality of uniformity from one size to another is said to be exceptionally good, helping to prevent paper waste.

Desk-Top Microfilmer 138

A flow type microfilm camera said to be the lowest priced and most compact unit ever designed, has been announced by *Microdealers, Inc.* The 16mm camera when operated as a desk unit will record letter-size documents, which are inserted through a slot in the front and are returned through a lower slot. The PDC Microfilmer may also be operated as a motorless skimming camera for recording maps, newspapers and other outsize material, including bound books. Other features of the P.D.C. include synchronized film and document motion, a length of only 13½" and a total weight with motor of seven lbs. A rear projection viewer is also available for readout.

ADVERTISERS INDEX

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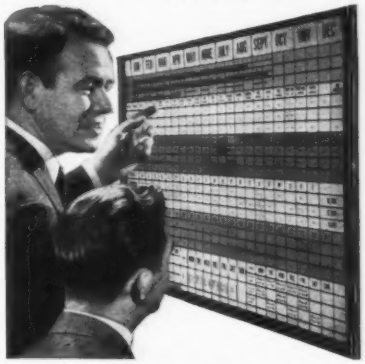

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NEWSMAKERS

Carl E. Nelson

Carl Nelson, who appears on this month's SYSTEMS cover, will be formally installed as president of the National Microfilm Association this month at the group's annual convention. Nelson is an appropriate subject for the cover since his job with Bell Telephone Laboratories entails both work with information retrieval systems and with Bell System microfilm studies.

As an officer during World War II he had varied duties including an assignment with the Allied Council in Berlin in charge of negotiations with the Russians, British and French on all problems affecting the optical and precision instrument industries. As an authority on optics he has done exciting experimental work at Bell in developing new microfilm cameras.

John K. Boeing

Bowing out after 23 years in the microfilm industry, Recordak's Board Chairman **John K. Boeing** was recently honored with a testimonial dinner in honor of his retirement.

Boeing joined Eastman Kodak

Company in 1920, and transferred to Recordak in 1928. At that time, the entire staff of the newly formed subsidiary consisted of eight people. As operations manager, he established the first branch offices in several key cities. In April 1960 the National Microfilm Association presented its annual award of merit to Boeing for "distinguished service to the microfilm industry."

Mr. Boeing and his wife live in Locust Valley, L.I., N.Y. They are planning extensive world-wide travel as well as continued activity in local community affairs.

A. R. Shriver

A second Shriver made news besides the one named to head President Kennedy's Peace Corps. Organizing a newly-created User Relations Department of the Univac Division, Sperry Rand, will be **A. R. Shriver.** Shriver joined the company in 1955 as a computer instructor, later becoming manager of university relations, a position he has held up to the present.

Richard S. Leghorn

Itek stockholders learned recently from the company president, **Richard Leghorn,** that Itek had increased net sales to $35,053,837 during 1960. A key factor in the success of the Massachusetts concern, which produces information retrieval systems, is Leghorn himself. An authority in data handling and microrecording, he will have the honor of being the keynoter at the National Microfilm Association convention this month (see page 22).

Leghorn is one of the original group which founded Itek in 1957. He has had 20 years of broad military and industrial experience in management, marketing, research and development. As chairman of the National Planning Association Committee on Security through Arms Control and while holding other government jobs his specialty has been data handling in the scientific and technical areas.

William Benedon

Heading the officers' slate of the American Records Management Association is **William Benedon** who

was installed recently as president. Benedon has been with Lockheed Aircraft since October, 1954, and presently holds the position of Corporate Records Management Advisor of that organization.

Before joining Lockheed he was records administrator for the State of New Jersey. In this capacity he drafted necessary legislation, manuals and retention schedules to effect records programming for State as well as county and municipal agencies.

Benedon has taught economics at Rider College in New Jersey and is presently teaching records management at the University of California at Los Angeles. He has also written articles on records management for various magazines (and appears on page 34 of this issue) as well as presenting papers at several national conferences.

Benedon received an MBA in accounting from the New York University School of Business Administration. In 1950 he received a fellowship from the National Records Management Council (Naremco, Inc.) and later became a senior consultant on records projects.